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FROM RED LAKE TO RAINY RIVER

By WILLIAM T. COX, *Minnesota State Forester*

A NUMBER of people have asked me to write an account of a recent snow-shoe trip across the Red Lake country in Northwestern Minnesota. Most of these people expected to elicit a tale of hardships and a description of worthless wild country. These I cannot relate. The trip was an easy one, if mushing on Indian snow-shoes can be considered easy at best; and the country traversed, far from being worthless, contains great areas of as rich land as can be found in the state. It is with the hope of dispelling some of the misconceptions regarding the region in question that I have decided to write this article.

There is a popular notion that the country for some distance east of Red Lake is for the most part a sparsely timbered swamp, and that the country north of the lake is one vast muskeg too wet even for travel and utterly unfit for habitation. These notions are absolutely wrong. The object of my trip was to find out at first hand just what the forest is like and what the land is good for so that the State Forest Service may pursue the proper policy with reference to the whole region.

Since there is a lack of roads and trails through the territory covered, we traveled on "webs." They were of the Chippewa style and in size 14x48 inches. They were made by Forest Patrolman Albert Smith, who is an expert at making snow-shoes and who knows the Red Lake and Rapid River countries better than any other man. Mr. Smith, his dog Togo and myself constituted our party.

Togo, a powerful and tireless dog, on the order of a "husky," but larger,

hauled a toboggan with all our provisions, blankets, a tent and a little stove. He followed along in the trail made by our snow-shoes and would eat nothing but rabbits. Rabbits were everywhere plentiful and easy to shoot with a pistol or snare at night on their runways.

From the Minnesota & International Railway to Red Lake there is a rich district, rather level but well drained and in most places covered with a splendid stand of hardwood, birch, elm, oak and especially poplar, very tall and of excellent quality. This is one of the very best hardwood districts of the state. There is also a good deal of white pine, cedar, tamarack and spruce. Much of the land has been logged off and settlers are rapidly clearing it up. Wherever cultivated, the heavy soil produces excellent crops and there are good local markets in the nearby logging camps and mill towns. The settlements along near the southeast and east shores of Red Lake show every indication of being prosperous considering their recent establishment.

On account of the great variety of tree growth, there is upon nearly every claim some kind of timber that can be marketed at a profit during the winter. Poles, posts, ties, cordwood, pulpwood, stave bolts as well as logs are cut by the settlers and hauled out to the railroad or the like, where there is a ready market at prices which give the settler some capital for developing his land, erecting buildings and purchasing stock.

Clearing, especially where the timber consists of poplar, is not at all expensive since grubbing is unnecessary. The stumps of poplar rot in two or



STATE FORESTER COX, "TOGO" AND THE SLED ON THE ARM OF BELTRAMI PRAIRIE.

three years so that they can be plowed out. Some of the settlers have fields of 40 to 100 acres under cultivation. The haul to Kelliher on the M & I. Railroad is from 5 to 12 miles, and there are several points along this shore of the lake where steamers call and produce may be shipped to Redby, the terminus of the M R L & W. Railroad.

This hardwood district east of Upper and Lower Red Lake would be an excellent place for stave mills, box factories, spool factories, excelsior plants, etc. The supply of material is ample, cheap and of the best quality. Manufacturing concerns like these would be of great benefit to the settlers and would bring about a more rapid development of farming and especially dairying, for which the district is admirably adapted. Within five or six miles of the lake there is an entire absence of summer and early fall frosts, due to the influence of such a large body of water. On this account there is a probability that fruit raising may become profitable here.

The Peninsular, between Upper and Lower Red Lake, in area about seventy square miles, is a sandy and gravelly ridge, covered with a beautiful Norway pine forest, and should be made a national forest or park.

Red Lake deserves to be much better known than it is. With the exception of Lake Michigan, it is the largest body of fresh water wholly within the United States. It covers an area of nearly 400 square miles.

Red Lake is remarkable in that despite its immense size, it contains no islands and that its shore is practically a continuous sand beach. The deepest portions of the lake are only about thirty-five to forty feet, but the bottom is so uniform that a sailboat or steamer can take a straight course without danger of striking reefs or sand bars. The surrounding country is even in topography and breezes on the lake are dependable so that this splendid body of water offers perhaps the best opportunity in the world for yacht racing, ice-boat racing and similar sports.



FOREST PATROLMAN SMITH WHO KNOWS THE UPPER LAKE COUNTRY.

Red Lake has no muscallonge but is well supplied with white fish, pike and other food fishes. The fishing industry has not been developed. Perhaps this is well since it will now be possible owing to an interest in conservation, to provide for proper supervision of the fisheries when they are developed to see that favorable conditions are maintained for the reproduction of the fish and continuance of the industry. It would be much more sensible for the government to encourage a conservative development of the fisheries of Red Lake and thus lead the 1,200 Indians living on its shores to become self-supporting through a line of work for which they are suited than to spend untold sums trying to make farmers of them.

The fish of Red Lake are worth far more to the Indians, if the government only thought so, than all the pine on the reservation and all the land which may ever be allotted to them. The present Reservation includes the coun-

try on the south and west sides of the lake, together with the pine covered peninsular and embraces about 400,000 acres.

At the time we were "mushing" across the broad expanse of the upper lake the snow-shoe rabbit was migrating, and hundreds of the little creatures were out on the crusted snow of the lake. Evidently during these migrations they are not in the habit of turning aside for lakes even if, as in this case, they could not possibly see the farther shore.

The distance across was more than one night's march for rabbits and they were accordingly compelled to squat on the snow and makes themselves as inconspicuous as the conditions permitted with nothing to hide behind. Owls of various kinds were abundant along the north shore of the lake and there were numerous evidences of where they had made meals of the unfortunate rabbits. No doubt that shore is an excellent hunting ground for owls

and foxes since they need only await their prey and catch it in the open. Small birds in their autumn migrations frequently perish in attempting to cross the lake in the face of cold winds and are found washed up on the shore in large numbers.

Red Lake may eventually be used as a reservoir to control the waters of Red River, and prevent the spring flooding of much good land between Grand Forks and Winnipeg. Red Lake River, through which the waters of the lake find their way to the Red River of the North, is no mean stream, having been used by steamers of considerable size freighting from Grand Forks, a distance of about 150 miles. There are rapids furnishing important water power at Red Lake Falls and Thief River Falls.

The streams entering the lake are Black Duck River and Battle River, at the east end, and Mud River, Bigstone Creek and Sandy River on the south side of the Lower Lake; Tamarack, Moose, Big and Little Deer Rivers, Mahnomen River and Shortley brook on

the North Lake. The Tamarack, Black Duck and Sandy drain rather large areas; the other streams are short.

The Indians living on their reservation, which includes the south and west sides of the lake, are not so badly demoralized as other tribes within the state. They have come less in contact with the white man and therefore retain more of their old characteristics. They are a pretty trustworthy lot of Indians, showing some industry when given work at all suited to their nature.

It is needless to say that farming does not appeal strongly to them, and I question the wisdom of the government's costly efforts to make them till the soil. Some of them, generally the squaws, do raise gardens, but the male members of the tribe prefer the lumber woods and the log drive, some spending their summers at the fisheries on Lake of the Woods and making good wages. For this reason I want to repeat that with proper supervision of the fisheries which could be developed on Red Lake these Indians might be-



THE FAITHFUL COMPANION OF MANY WINTER TRIPS THROUGH THE WILD COUNTRY.



THE KIND OF SLEDS USED IN THE LONG TRIPS OVER FROZEN WATERS FROM ONE CAMP TO ANOTHER.



BREAKING A TRACK THROUGH SPRUCE AFTER A HEAVY SNOW STORM.

come self-supporting and useful citizens.

We now come to a particularly interesting part of our trip, namely, the crossing of the so-called "Great Muskeag."

After leaving the north shore of Upper Red Lake we went through a narrow belt of hardwood and spruce, emerging into tamarack, which soon gave out, and we were on what has been indicated on map after map as an expanse of open swamp. This has deterred everyone from venturing into the district.

As a matter of fact a large part of the country from Red Lake to the

Rapid River was wet until the last four or five years, but a change has taken place which is exceedingly important to Minnesota, for it has resulted in giving the state another "Red River Valley." Perhaps due to the driving of the hundreds of millions of feet of timber through the outlet of Red Lake and down the river, the channel has been deepened and the lake permanently lowered. This has reduced the water level in the former open swamp to the north and made of it a prairie.

I now propose naming it "Beltrami Prairie." It is a wonderfully rich piece of country with a deep black soil capable of producing prodigious crops and

THE KIND OF WINTER SHELTER USED IN THE NORTH COUNTRY AND WHICH MAY BE MADE VERY COMFORTABLE.



in places ready for the plow without further drainage. With state ditches, some of which are already approved by the Drainage Commission, there will be less danger of flooding than in what are considered the best portions of the Red River Valley. Much land on the borders of this rich district north of Upper Red Lake has been taken up as homesteads recently. But to my mind the best of it still remains to be homesteaded, and the man who is willing to undergo some hardships and remoteness for a year or two will be well repaid for making his home in the Upper Red Lake country.

We found travel easy on "Beltrami Prairie." Snow-shoeing was good and a fair distance was made each day. Prairie chickens were very plentiful, both the pinnated and sharp tailed species being observed in big flocks. The tracks of foxes and coyotes wound here and there, but it was not until nearing the heads of creeks which drain to the Rapid River that we observed tracks of big game, then moose tracks were abundant and we started one which was feeding on the willows along Miller creek. The caribou which range in this locality had gone east toward the headwaters of the Tamarack, so we did not see any of them on our trip.

The existence of caribou here has been known for years, but owing to the closed season and to the remoteness of their range, few of them have been killed by hunters. The Indians have shot a few, but since the swamp has dried up and the mother caribou no longer find safety during calving time on little islands which used to dot the great swamp, the wolves now get practically every calf.

After crossing "Beltrami Prairie" we entered the hardwood, spruce and cedar forests along the Rapid River, and its tributaries. This is a district of rich soil and heavy growth. Whatever is found growing on a particular piece of land seems to be producing all it can. The trees are tall and the timber yields heavily. It would be difficult to find better stands of poplar, spruce or cedar than are to be seen

here. There is also considerable ash, birch and soft maple.

Down the rapid, half way to the "forks," the settlement begins in earnest and from there on forty miles down to Clementson, where it empties into the Rainy, settlers' cabins and clearings line the beautiful banks.

Wherever crops have been raised in these clearings the yield and quality have been wonderfully good. Wheat, oats, barley, clover, timothy and root crops yield as well as anywhere in the state, and even tomatoes seem to be a sure crop, which is an indication that summer frosts are lacking.

Between Baudette and the Rapid River settlements there is a large area of fertile land, much of which had a heavy stand of spruce, cedar, tamarack and birch, until the fire of 1910 swept that locality. There are still patches of green timber, but most of the forest was killed. Some of the land is not difficult to clear and nearly all of it is good farming land when once cleared. A good deal of it has been cut over for pulp wood and cedar. The land was practically all taken up primarily for the timber and can now be bought at very low figures by people desiring it for farms.

Along Rainy River there is a beautiful country. The soil is not quite as rich as on the Rapid River, but is nevertheless real good soil. Moreover, the transportation facilities are already fair and markets good along the Rainy. On the Canadian side there are comparatively old settlements and the farmers are well-to-do. They have not known drouths, summer frosts or other causes of crop failure in thirty years. The proximity to Lake of the Woods on the northwest, Rainy lake on the eastward and Red Lake on the southwest, temper the winds and keep them above the point of frost danger through the growing season.

The man who watches the Rainy River country for the next ten or fifteen years is going to see a surprising development or I am badly mistaken.



A VIEW OF ONE OF CENTRAL PARK'S LAKES.

CENTRAL PARK, NEW YORK: A WORK OF ART*

By HAROLD A. CAPARN

THE designers of Central Park decided that the best expression they could bestow on it, that which would be of the greatest value to the greatest number, was one which would recall the feeling of the woods and meadow, rocks and water, of rural scenery. This would give the relief of suave surfaces of ground and mobile masses of foliage to minds and bodies wearied with the endless rectangularity of the streets. So they laid out a scheme, simple in its main structure, though looking complicated enough on the map, consisting of a road running all around the park, with certain cross-roads to provide for the east and west traffic. Four of these are the famous sunken roads which are said to have been the means of Olmsted and Vaux gaining the prize, and which they so skillfully treated that you can seldom see them unless close upon them, and

often cannot see them at all even when crossing them. The reason for concealing them was that they were intended for business traffic, which should be kept out of the park. On this road plan is superposed a system of walks crossing the park in many directions, leading to and helping to create an endless variety of scenes of grass and trees, lakes and rocks. Several sheets of water of considerable extent occupy the sites of former swamps, the muck of which was used to enrich the lawns and woods. These walks penetrate and enclose pieces of ground of the most varied shape, size and expression. Yet all are connected so admirably that one passes insensibly from one to another, and there is nowhere apparent the shock of arrested dimension, of finality that is essential to the expression of architecture but quite foreign to the intent of informal design. Everywhere

is displayed the utmost resource of the artist and variety of treatment, as consistently as though the true solution of the problem of each part had been found without effort. When conditions are at their best, after rainy weather or in the early morning or evening, there is a wonderful air of calm beauty pervading it all, so that one marvels more and more that such a thing with such a sentiment should exist in New York City.

Now, if you travel in any rural district, you will find in all directions the raw material or the motive from which Central Park is made. There will be trees and bushes, meadows and rolling ground, buildings and bridges, rocks and water, each in its way more or less beautiful because of the beauty of many or most of the details, the cheerfulness and vitality of it all: in short, because it is the country, as big and free as all out-of-doors. But, though there is much pictorial beauty, it will be seldom that you find a scene, small or large, that composes well. By composing well I

mean not only showing orderly arrangement, just proportion, good lines, and so on, but conveying the impression of a complete picture, "carrying through" as it is called. This is the quality that conveys an impression of unity to the mind, that gives the effect of simplicity to the most complex design, and may be seen in a book cover, a Corinthian column or a church façade. Remember, I am not speaking of the untouched country, but of the country altered by man mainly for the purposes of agriculture. There will be a piece of meadow with trees on it, but they will be too scattered or too crowded, or a border of them will have a gap in it or a group extend too far or not far enough. A piece of ground of naturally good shape will be partly in meadow and partly plowed up, and a wall or fence will divide it just where it is best placed to interrupt the flow of line of the earth's surfaces. Houses, barns and other buildings will be scattered wherever the convenience of their builder dictated, but with little or no



A WINTER SCENE IN CENTRAL PARK.

A DELIGHTFUL PATHWAY THROUGH DENSE FOLIAGE.



thought to their effect as part of the landscape. The whole of this could be made into a coherent composition if anyone would pay for it, and so could each scene that the eye can separate for itself. This is what is done in Central Park; each successive part into which the uneven surface naturally resolves itself is treated according to its own suggestion, with thoroughness and reserve. Buildings and other subordinate objects are carefully set where they will do least harm to the general composition. The ragged countryside planting is arranged in groups or masses or borders with due regard to the habit of the trees, texture, and color of foliage, skyline and so on. For the rough or divided surface of land is substituted the smooth and continuous lawn, displaying the best contours of the ground, and preserving them unbroken to their logical end. In fact, an informal park is mostly constructed of endless variants of these two features of lawn and planting, of open spaces surrounded by covered ones, as a room or a building is composed of voids and solids.

We should not forget that this composition of voids and solids, of open lawn and enclosing foliage, is not a natural thing, is not even an imitation of nature, as it has been so often called; even its prototypes, the meadow and woods, are not natural. The meadow is browsing land cleared and cultivated by man, and the woods themselves, indigenous though they may be, have their extent and outline from the axe of the farmer. Then what of the lawn set in artificial planting, it may be, of exotic trees and bushes? It is but a paraphrase, a conventionalizing of another artificial thing, and is itself as artificial or constructed a thing as any building or statue; in fact, it resembles the works of nature, much as a statue or painting resembles its original. Yet the general impression conveyed by a well designed, large city park is that of being in the country.

If it is desirable to produce the impression of being in the country, one would expect that the easiest way would be to imitate the country as closely as possible. But the curious

contradiction here is that, if we did, we should not produce the effect of being in the country at all. If we were to cover the area of Central Park with fields of corn and potatoes, with grazing land, casual buildings, woods, swamps, and crowded or scattering trees, it would merely look like a piece of unkept city land which remained open because it was held at too high a price, or because it belonged to the estate of someone deceased, and could not be sold. Even if you should arrange your agricultural features with regard to their artistic effect, like the "ferme ornee" of Shenstone, you would not get the feeling of the country. The city park is not an imitation of the country, it is a paraphrase of it; and if you want to create in the city the country feeling, you must not imitate the country, you must paraphrase or conventionalize it. You must reproduce not its accidents and incidents, its roughness and casualness and disorder; you must reproduce its essentials, its openness, its vitality and its verdure, its contrast of the surfaces of the ground and the masses of woods, of the light greens of the grass and the dark of the trees, their freedom and grace and benignity.

Central Park, in view of its extent, its cost, its location, is perhaps the most important and interesting thing of its kind in the world. It is one of the best-loved and one of the worst-hated public recreation grounds in the world. It is admired without reserve by vast numbers of people of all kinds, and it is condemned with as little reserve by some others. Among its friends are east-side Hebrews, west-side millionaires, New York's blue blood, aliens who came over in the steerage but a few months ago, and everything in between. Among its enemies are the type of self-styled "practical" man who cannot see that a piece of city land is doing any work unless it is covered with a pavement or a building, some real estate men who see fine possibilities of a boom in their business were the park cut into lots, and a certain class of artists who see no merits in its present plan, and think it should be

ONE OF MANY BEAUTIFUL EFFECTS OF LIGHT AND SHADE.



laid out in some other style. These artists say that, being a long and relatively narrow rectangle set in a system of parallel lines, its layout should also be rectangular, that we ought to have something like the Champs Elysees or the avenues at Versailles. They say that it should have a scheme in scale with its size, that you should be able to see through it from end to end and, in fact, that there ought to be something grand and vast, instead of the rural prettiness they see in it at present. They decry the meandering lines, the indefinite surfaces and vistas, that everywhere abound. In short, they find in it little but irresolution and aimlessness, and an expression which excites in them only the contemptuous verdict that there is no "design" in Central Park.

We need not concern ourselves with the naive utterances of the "practical men" or the real estate operators, but the views of some of the others touch us very closely, for among them are some of the men in our own world of artists whom we most respect, and in whose class we all hope to be. But, if you examine their criticisms of Cen-

tral Park, you will find them all merely expressions of personal opinion, not of natural laws or canons of art. You will find that they may have been misled by prejudice for or against one style of design, or by an imperfect understanding of one style of design—the informal. They may assert that a rectangular piece of ground should of necessity have a rectangular plan, which seems about as reasonable as that a rectangular frame should of necessity enclose a picture of rectangular pattern; or that the veining in a marble panel must properly be perfectly symmetrical, like a piece of floor cloth. The boundary lines of Central Park were laid down, not by nature or the conditions of the problem, but by the city engineer. Why should they necessarily control the design? As a matter of fact, once inside Central Park, it is as a rule hardly possible to tell what or where the boundaries are; and when you can see a boundary it is a row of high buildings so far away that they seem to be in no conflict with the park scenery; and probably from no point within is it possible to discern the en-



ONE OF THE MANY PLACES WHERE CHILDREN LOVE TO PLAY.



A SPARSELY WOODED SLOPE WITH DRIVEWAY IN THE BACKGROUND.

tire size and shape of the park. In short, once within, you lose all sense of the boundaries, and are affected only by the park itself. It seems to me that there could be no such grateful relief from the rigid rectangularity of the New York streets, nothing in so pleasant contrast with the eternal parallelism of the city plan, as the indefinite lines and surfaces of the park; its undulating lawns with foliage, the contrasted verdure of its grass and trees and bushes. When we get into a large park, we surely want to escape straight lines, not to discover new ones; to find vegetation in its natural freedom, not shorn into the forms of stone and wood. Probably nothing could be more fortunate than that its principal park in the heart of Manhattan Island should be composed of lines and forms and textures that recall the best of the country scenes of pasture and wood and water, and provide continual refreshment and solace for those wearied with the ruth-

less lines and angles and bricks and mortar of the surrounding streets.

I am inclined to suspect that some of the abuse of the plan of Central Park arises from its appearance on paper, at first glance having little relation to the system of streets around it. But it is dangerous to be misled by the picture plan, with its resolute straight lines running off into impressive infinity, and the whole merging into the nebulous unknown. I admit, at once, that the plan of Central Park on paper looks about as vague and shapeless a thing as I know, but then so does a study in anatomy; and, whatever one may think about the park plan, one will certainly not deny that the anatomical plan represents a thing quite perfect in design from beginning to end with complete connection and coherence between all its parts and with all of them mutually interdependent. The structure of the human brain shows no regard for its appearance on a medical chart, yet

its design surely shows as comprehensive adjustment of parts to a complete whole as we can conceive. So it is with an informal landscape design; so long as it is logically conceived and consistently maintained, so long as it "carries through" not only in feeling but in actual structure, and so long as it serves the purposes, practical and esthetic, for which it is intended, it matters little what it looks like on paper.

This brings me to another charge against Central Park: that it is a succession of separate features pretty enough in themselves, but not sequential nor connected by any big scheme worthy in scale of the size of the tract, not such as need the serious attention of an artist to compose. If for the abusive word pretty you substitute "beautiful," half the sting is taken from this severe arraignment. Again we have an adjective which is a matter of personal opinion. To me the scenes of Central Park seems as beautiful as any I know of their kind. Their relation to each other is so well managed that you cannot find where the line of separation occurs, but pass imperceptibly from one to the next. It is no reproach to a large building that it consists of many separate and relatively small apartments whose connection with each other and with the whole and whose importance as part of the whole cannot be seen, but can only be demonstrated by the convenience and efficiency with which they serve the purposes of the whole. Every building cannot be a church or dance-hall, a building of one room; we must have our business blocks, our hotels, our courthouses, and so on, which do not admit of interior grandeur in scale with the mass of the structure. So with a park; it may serve more and better purposes by being a succession of scenes adjusted to the natural contours, aptly united and rationally separated, than by being constructed on a single motive apparent at a glance. They who find a lack of simplicity and dignity in Central Park forget that it was made not only for those in it, but for those over it, who can look down on it from the sur-

rounding buildings, the upper stories on Fifth and Eighth Avenues and Fifty-ninth and 110th Streets. Before them opens a prospect of massed foliage, with openings of green turf, and from some parts of shining water, perhaps as superbly simple as any formal scheme that could be imagined. The fact is, a good deal of this criticism rather savors of ill-nature and calling names; a thing of which artists, who all live in glass houses, should be very careful. The next stone may be thrown at your house or mine, and we cannot get it mended because we cannot prove either that we are right or that the other is wrong; we have no means of demonstrating the beauty or justness of our work as a building inspector can demonstrate good or bad work, or as a watch can be shown to be well made, to anybody's satisfaction, by merely keeping time. We all depend for approval or disapproval on the body of opinion, and nearly all criticism can be boiled down to "I think that" or "it seems to me." I think that the design of Central Park is, all things considered, and allowing for certain imperfections, very good; but I cannot demonstrate its excellence except in the same way that I can demonstrate the excellence of design of Michael Angelo's Last Judgment, or a landscape of Corot.

Inasmuch as most artists nowadays are educated in schools of art, and emerge therefrom supported by the confidence and authority of their school, it is usually assumed that such training is necessary to produce an artist. But in all arts there have been men of eminence without conventional training, and notably so in landscape design. No more striking instances of the self-evolution of natural gifts can be found than in the designers of Central Park, Frederick Law Olmstead and Calvert Vaux. Vaux was an Englishman who had turned to landscape design through natural preference, and the extent and value of whose work was never particularly known, and perhaps never will be. Judging by the quality of what he did alone, he was one of those who have found what they are sent into the world to do. As for Olmstead himself, it is

often assumed that he entered on the construction of Central Park as an inexperienced amateur, and succeeded by a miracle. But he had a strong natural inclination for such work. He had traveled through Europe, and studied its scenery natural and artificial. He had traveled 5,000 miles on foot and horseback, to observe the scenery of his own country; and, in fact, for fifteen years he had steeped himself in the works of nature, and of art as applied to nature, and was so full of her precedents and suggestions that he could discover and explain the sentiment inherent in any piece of ground, and propose a fitting method of treatment. He had also had not inconsiderable experience in actual constructive work, and, though his training was not that of the schools, it was perhaps in reality as thorough as that of anyone who has prepared himself for the practice of an art, for genius will occasionally do better and travel farther when left to its own guidance than ordinary talent directed by others. And, after all, his education was not different in principle from that of other art students. They study the work of their predecessors and exemplars, the works of nature and man's interpretation of them, until they have amassed a store of impressions and experience, from which they can draw the power to express what is in them when opportunity arises. Their training differs from Olmstead's only in that their choice of examples is guided,

and their conclusions from them continually criticised, by their teachers. He made his own choice of subjects, and drew from them his own conclusions unaided. It is worth while to linger a little on this man who, by his career and his achievements, was one of the very greatest of American artists. His personality, his career, and even his writings, bear many striking resemblances to those of Humphrey Repton in England, in the previous century, whose books are probably the most valuable contribution to the literature of landscape design in existence, at least in the English language.

The value of all this discussion is not very great, except as it supplies us with answers to hostile criticism, which sometimes proceeds from apparently high authority, and aids us in focusing and strengthening our own impressions. The fact remains that few people can enter Central Park without becoming sensibly happier, that it produces to a greater or less extent in those who enter it such sensations as its designers wished. And, surely, for a man to be able by his creation to arouse in innumerable others who come after some such sense of beautiful in nature as has inspired himself, to instill into them something of his own spirit, is a great achievement; and the means by which he does it is entitled to be termed in a very high degree a Work of Art.

*By courtesy of Landscape Architecture.

The Western Forestry and Conservation Association, representing the five timber Pacific States, sets the standard for forest fire prevention as well as forest fire fighting. Among its methods is the circulation among the people of hundreds of thousands of pamphlets, play-cards, stickers and warnings, which are sometimes appeals, and sometimes warnings, as to the importance of the forests through the community at large and what a loss would be involved in their destruction.

NINE GRADUATES AT MONT ALTO

The graduating class at the State Forest Academy, Mont Alto, Pennsylvania, which held commencement exercises on August 14, comprised Walter R. Evans, Nathaniel B. Funk, Joseph R. Hagentogler, James A. Irvin, Charles R. Meek, Maurice Mustin, Milton O. Robinson, James B. Ryon, and George W. Sheeler.

MASSACHUSETTS FORESTRY WORK*

STATE FORESTER F. W. CRANE, of Massachusetts, is satisfied that his department is accomplishing gratifying results and doing as much as the State appropriation permits. In his eighth annual report recently issued he describes in detail the year's progress. He says in part:

It has been the constant aim of the State Forester to establish a forest policy worthy of Massachusetts interests. Year by year, through the splendid support given by our public-spirited citizens and various organizations, we have made constant progress.

In submitting this, the eighth annual report, it is certainly a great pleasure to be able to state that, through the generous consideration of the last General Court, we have been able finally to perfect a State-wide forest fire policy that promises very great economy. With an up-to-date patrol and look-out system for forest fires, backed by a strong and efficient town and city for-

est warden unit of organization, already well established, together with the perfecting and adapting of previous laws, we now can boast of being in a position adequate for natural growth and development.

I am frank to say that there never has been a more wholesome, co-operative interest shown toward this department than during the present season, and this, too, following an apparent misunderstanding on the part of a few of our legislators last session, who finally gave the department their support.

I firmly believe that ultimately Governor Foss's first year's administration will be as noted for its establishment of a State-wide forest fire protective policy as any legislation enacted during the session. When we once can assure our people that forest fires can and will be controlled, there will be little trouble to interest capital in reforestation. With fire protection and a rapidly increasing interest in modern forestry, which no one can deny is prevalent even at pres-



A PORTION OF THE STATE FORESTER'S NURSERY AT AMHERST. THESE ARE THREE-YEAR-OLD WHITE PINE SEEDLINGS THAT WILL BE SET OUT PERMANENTLY NEXT SPRING.



A VIEW FROM THE LOOKOUT STATION FOR FOREST FIRES ON GRACE MOUNTAIN, IN WARWICK. WACHUSETT MOUNTAIN IN THE BACKGROUND, ABOUT THIRTY MILES AWAY.

ent, it only remains for the casual observer to predict what we may be able to accomplish in Massachusetts.

The various lines of work in this department have been explained quite fully in past reports, and it is necessary only to state that the work throughout the year has even surpassed any other. The requests for examinations and advice have been far in excess of our ability to meet them with our present force. Forestry literature has been in great demand, and several bulletins have been revised and reprinted, besides much new material sent out. Lectures and demonstrations have been constantly requested, and as many given as conditions would permit. Forest laws and fire-warning posters have been posted fully by our wardens throughout the State.

Towns generally are awakening to the necessity of being equipped with modern fire-fighting apparatus if they are to encourage forestry in their midst. The towns with a valuation of \$1,500,000 or less are taking advantage of the State's offer of assistance, and it is predicted that the usual appropriation by the State of \$5,000 will be utilized immediately following the spring town meetings. As usual, those towns with equipment and organization have kept

forest fires under control, while other towns have suffered.

The work of reforestation continues as popular as ever, and I am con-



BROWN-TAIL MOTHS THE MORNING AFTER THEY HAD BEEN ATTRACTED TO THE ELECTRIC LIGHT, ON LAKE SHORE AVENUE, NORTH SHORE.



BACK FOREST WHERE NO WORK WAS DONE. TREES STRIPPED OF THEIR LEAVES IN JULY, AS THOUGH IT WERE WINTER.

vinced that if the Legislature could see its way clearly to enlarge greatly the present appropriation for this work, we could readily plant many times our present annual acreage. Our reforestation act is unique and is proving a success. The work in this line will be far better appreciated in a few years, when the young trees have grown to a more desirable size.

The gypsy and brown-tail moth work, while still a very perplexing problem, is better understood and more intelligently combated than ever. Our people are finding out that the best way to fight these pests is to take advantage of the advice and assistance that experience has taught us. This office is in a position to advise and assist in this work throughout the infested territory. The division superintendents are men of ripe experience, and the local superintendents are more efficient and in better control of their conditions than ever before.

If, as we now have reason to believe, it is soon to come to pass that the

United States government will take over the parasitic work which the State has financed up to the present, and also assume the work of controlling the spread of the moth, then our State work will resolve itself down to internal self-preservation in the present infested territory. With this arrangement, I believe the State ought to combat the enemies satisfactorily with decreasing expenditures. Many cities and towns once badly infested are at present, through State aid, in good condition, and now should become self-supporting, and it is the department's purpose to so direct the work that the annual drain upon the State treasury may be lessened as much as possible.

Massachusetts has been the motive force in combating these pests up to the present. In recent years the insects have spread into adjoining States, where little attention to their control has been given, so that now the problem is one of protecting the nation.



SPRAYING IN THE FORESTS, WITH 1,500 FEET OF HOSE AND A PRESSURE OF 300 TO 350 POUNDS AT THE NOZZLE. EXPENSE NOW REDUCED FROM OVER \$40 AN ACRE TO BETWEEN \$6 AND \$10.



GYPSY MOTH CATERPILLARS DYING FROM THE WILT DISEASE, OR FLACHERIE.

It is believed that the national government can ill afford to take other than a more progressive stand in this work. A million dollars a year at present will go farther than a much greater sum later on. It is reasonable to hope that the parasites, diseases or natural causes may work to the detriment of these insects, but there are many chances of other sections of the country becoming infested and thereby working great destruction before results from these are realized. At present the only practical means of protection from the spread of this pest is through spraying and other well-known mechanical methods.

The reforestation work has been carried on this year along the same lines as formerly, and the increasing interest of lumbermen and landowners proves it a policy worthy of enlargement.

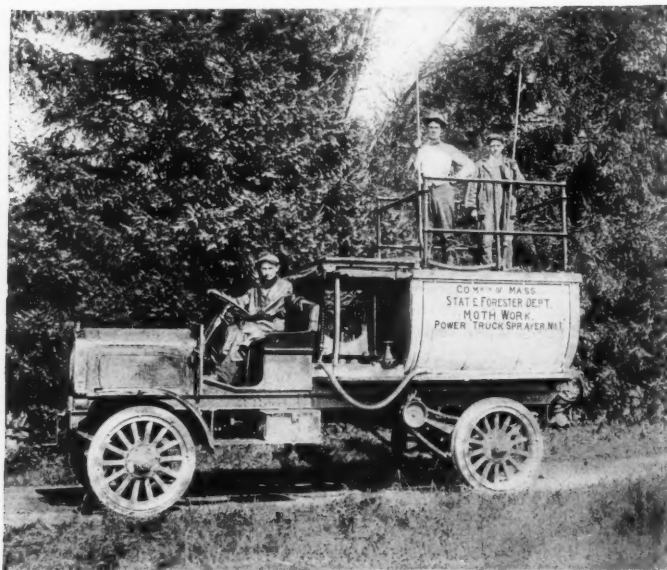
The plantations put in during the spring of 1909 and 1910 are showing up well, and growth in many instances on plantations made with transplant white pine being as much as 8 to 16 inches this last season. There was practically no loss this year from dry weather affecting these plantations, proving that when once well started

they are not liable to be affected by climate conditions.

Plantations made this year in one or two instances were quite badly affected by the exceedingly dry season, as might be expected.



THE POWER-TRUCK SPRAYER IN ACTION, THROWING TWO STREAMS AND TRAVELING AT THE RATE OF 4 OR 5 MILES AN HOUR.



A CLOSE VIEW OF THE NEWLY INVENTED POWER-TRUCK SPRAYER. SAME POWER AS THE ABOVE, BUT DOES AWAY WITH HORSES AND DRIVER, AND THE ENGINEER BECOMES THE CHAUFFEUR. TANK AND PUMP ARE EASILY REMOVED AND THE TRUCK THEN IS USED THE SAME AS ANY TRUCK.

Increased interest has been shown by parties looking over plantations with the idea of making small plantings on their own land, and the large number of inquiries shows that this work is awakening great interest.

This year 860 acres have been planted, and deeds for 500 acres additional have been recorded which, from lack of sufficient appropriations, we were unable to plant. There are also now offered 700 acres more. The amount of work possible is governed entirely by the appropriation, and it would seem advisable for the State to enlarge this work.

It has been impossible up to the present time to raise sufficient stock to take care of the planting done under the reforestation act, the department being forced to purchase a large number of seedlings from outside nurserymen at a much higher price than if raised on our own land. It has, therefore, been deemed advisable to enlarge our nursery from time to time, and we are now in a position to supply from our own

nursery sufficient stock for our planting work next spring.

It is with considerable reluctance that each year we include in our annual report a chapter on this painful subject,—painful, because forest fires are the greatest obstacle to the advancement of practical forestry throughout this Commonwealth. As long as this State continues to burn over from 35,000 to 100,000 acres each year, just so long will forest owners hesitate to make provision for natural reproduction, to plant trees, to make improvement thinnings, or to do other work looking to continued forest production.

The season just ended has undoubtedly been the worst fire season this State has experienced in many years. When we stop and compare figures with the records of the past three years we find that during 1908, 1909 and 1910 there was burned over throughout this State 116,976 acres, with a damage of \$600,017, and in the year 1911 our reports show 99,693 acres burned over, with a damage of \$537,749, nearly as



THE FIRST POWER-TRUCK SPRAYER EVER INVENTED. BUILT BY THE MASSACHUSETTS STATE FORESTER IN 1911 FOR SPRAYING IN THE GYPSY AND BROWN-TAIL MOTH WORK. THE WHOLE OUTFIT WAS DESIGNED AND BUILT FOR THIS WORK, AND PROMISES TO REVOLUTIONIZE THE QUESTION OF SPRAYING, PARTICULARLY ROAD-SIDE, PARK AND SHADE TREE WORK, IN COMBATING INSECT AND FUNGOUS DEPREDACTIONS. IT CAN BE USED FOR FOREST FIRE WORK AS WELL. THE SAME ENGINE THAT PROPELS THE TRUCK ALSO IMPARTS THE POWER FOR SPRAYING.

much as the three previous years combined. Estimating the forest area of the State at 2,500,000 acres, which is a very conservative estimate (and in order to reach this amount there has

been included all the scrub growth and old pastures), it will require only twenty-five years to completely destroy every acre of forest land within this State. Then what is the result? Sim-



THE STANDARD IMPROVED POWER SPRAYER, PLANNED AND BUILT BY THE STATE FORESTER.

ply this: not only are we compelled to go elsewhere for our timber supply, but we have created a condition which seriously threatens our future water supply, for it has been demonstrated by the greatest engineers in the world that forests play an important role in the regulation of rivers. They retain for some time the rainfall and lessen the violence of flood flow. Whenever forests have been destroyed stream flow has always become more irregular and floods have increased in number and violence. Therefore, is it not time the public were awakened and a more thorough organization perfected to avert these dangers?

The moth work has been under the supervision of the State Forester for the past three seasons. It has been his constant aim to perfect a "live-wire" organization. The department has received \$300,000 a year for the State work and \$15,000 a year extra for parasite work. This last sum has been largely expended under the direction of the United States government. For the expenditure of the \$300,000 each year for the past two years statements have been made in previous an-

nual reports, and the results of the present season are given in the following pages.

The expenses for supervision of moth work in two years were reduced from \$92,000 to \$36,000, and we believe the work is more efficient than ever.

What has been saved in supervision has enabled the department to do just so much more in cities and towns. With modern conveyances, as with the motor cycle and automobile, the whole problem of better supervision and methods has been solved. The improved spraying machinery and general equipment have revolutionized former practices, as the cost of woodland spraying alone was reduced from \$40 to about \$6.50 an acre. The burlap method of treatment is practically a thing of the past, except in certain cases. The same amount spent for spraying that was allowed for labor and burlap proves more effective in combating the moths.

At present we have a more definite State policy. The co-operative understanding between the State forces and the United States government officials



A NATURAL STAND OF WHITE PINE PROPERLY THINNED TO ASSURE GOOD GROWTH OF THE REMAINING TREES. IN THE TOWN OF BUCKLAND.



A PLANTATION OF WHITE PINE, THIRTY-EIGHT YEARS OF AGE, WHICH HAS BEEN THINNED AT A PROFIT, BELONGING TO W. G. KILLBURN OF LANCASTER.

is much improved, and it is believed promises well for the future.

During the fiscal year of 1911 the work on the State highways has been supervised by this office as in previous years, and we have given it our best attention. Not only has work been done against the gypsy and brown-tail moths, but we have also worked against the elm-leaf beetle in the moth-infested section of the State. The condition of the State highways at the present time is very much improved, as far as the gypsy and brown-tail moth infestation is concerned, and is not at all serious. A general infestation of the elm-leaf beetle occurs throughout the district on the highways, and in most places is serious, and will necessitate very careful spraying during the next summer season.

The amount expended this year is somewhat increased over the previous

year, owing to the fact that in 1910 the government took care of several miles of State highways which had been turned over to the care of the highway department during this year.

In view of the fact that a feeling has been entertained by some people in the State that infantile paralysis has been caused in some instances by arsenate of lead used in spraying for the gypsy and brown-tail moths, the State Forester has caused a rigid investigation to be made in order to determine if there is any foundation upon which to base such fears. As a result of his research he is firmly convinced that the use of arsenate of lead has in no way been responsible for the existence of the disease, and apprehends no danger in the future from its use.

*By courtesy of the Massachusetts State Forestry Department.

GREAT LOSS FROM YUKON FOREST FIRES

CONSUL G. C. COLE, Dawson, Yukon Territory, Canada, reports as follows:

The timber referred to in the annexed paragraphs from the Dawson *Daily News* of May 28 is spruce. In fact, nearly one-half of the whole Yukon Valley, including that part in Alaska, contains a dense growth of spruce (of a size suitable for pulp and firewood only) which, if protected and utilized, is worth more than the valley's gold.

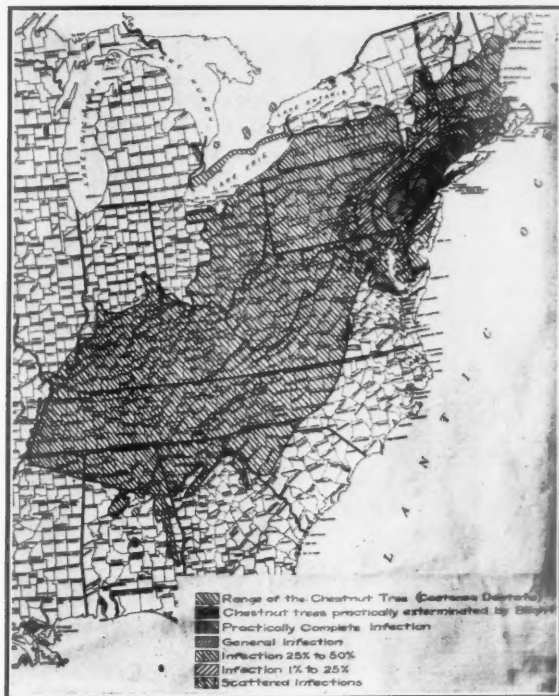
Timber destroyed by forest fires in Yukon Territory the last two weeks was worth millions of dollars. Men engaged in the wood business say it might be placed at \$100,000,000 or even more. A well-known Dawson wood dealer remarked:

"It is easy enough to arrive at the fact that wood destroyed was worth millions. The Yukon Gold Co. burns at its thawing plants \$500,000 worth of wood in a season of less than six months, yet the removal of that wood scarcely makes a noticeable hole in the forest. Dawson has been burning a large amount of wood for 14 years, and for a long time much, if not the most, of it has come from two gulches north of town. Those gulches have pro-

duced millions of dollars' worth of wood.

"These forest fires are sweeping over hundreds of miles of virgin timber. One patch reported burned south of Dawson is said to be 8 by 50 miles. In that area alone are thousands of gulches each containing tens of thousands of cords of wood. The loss there alone easily mounts into many millions. Some may say the timber burned was of no value because it stood where it would not be touched in many years, and possibly never. I say it is all valuable. The future of this region and the great outside demand which is calling for timber of the class we have here for pulp and other purposes must be considered. The fine timber of Yukon now destroyed by fire can not be replaced in 100 years. True, the large trees are fit for wood after the fire goes through, but woodmen estimate that a fourth of the good wood is consumed.

"Wood cut and placed on the river bank costs the chopper \$3 to \$5 a cord. To bring it to Dawson from near the White costs \$1.50 a cord. The large contractor tries to clear about \$1.50 per cord on wood delivered here. Running the risk of loss by fires of the kind now raging, he is taking great chances."



MAP SHOWING RANGE OF THE CHESTNUT TREE AND COMPARATIVE PERCENTAGE OF THE CHESTNUT BARK DISEASE.

FIGHTING THE CHESTNUT TREE BLIGHT

By OLIVER D. SCHOCK

THE Pennsylvania Chestnut Tree Blight Commission staff of employees numbers about two hundred persons, including the executive force, special investigators, district agents, field or county agents and scouts. With additional expert helpers their work is being done in a systematic and thorough manner, and it is believed that the immensely valuable native chestnut in Western Pennsylvania can be saved from extermination by the well-directed efforts of the Commission, together with the willing co-operation of timber owners and farmers.

East of the Allegheny mountain range and in eastern and southeastern Pennsylvania, the chestnut blight has been especially virulent, causing very heavy damages. Its spread during the past summer was both rapid and extensive, many new fields being reached by the blight spores. Just how these disease-bearing spores are disseminated

is the same puzzling question, and this subject is now receiving most careful attention. Whether the winds, birds, rodents or insects are responsible, or whether there is a joint responsibility on the part of these various agencies or elements, will soon be determined through the medium of the interesting investigations in progress at the University of Pennsylvania, Emile, Mount Gretna, Charter Oak, Martic Forge, Connellsville and other points of observation. The theory that the wind carries the infection quite readily has been advanced by those who noted the rapid increase in the number of infected trees that occupy an elevated plateau, located near Hamburg, Berks County, Pennsylvania, one observer expressing doubt as to the abundance of animal life in sufficient numbers to cause such a marked and rapid advance as was noticeable in that district.

The original Pennsylvania plan to stop the progress of the blight in its

westward stride has received much favorable support. A large majority of the field force in the employ of the Commission are working throughout the counties situated west of the Susquehanna River, where only occasional or sporadic infections are found. These are speedily destroyed and the owners instructed to watch carefully for subsequent infections. It is in this manner that the fungus had been kept under control, although not completely eradicated in the district designated. There are those who believe that the form of *Diaporthe parasitica* found on the chestnut of western Pennsylvania counties may be less virulent than that prevalent in sorely affected eastern Pennsylvania counties, since it is less common, and apparently, more readily controlled. A stronger and more vigorous chestnut, under more favorable climatic conditions, soil, etc., may afford the power to add greater resistance to the attack of the fungus. Let us earnestly hope that Nature may come to our help speedily in coping with the chestnut blight, since tree-surgery, medication, fertilization and experimentation, generally, has been comparatively futile in those localities where, perhaps, relief is most needed.

The Pennsylvania authorities believe in thorough work. Active scouting has been followed by such practical work as was deemed expedient. The press of Pennsylvania and adjoining States heartily supported the Commission, and the campaign of education and publicity met with warm approval. State, pomona and local grangers, agricultural societies, etc., manifested their willingness to co-operate in the task of saving the chestnut, and all of these organizations are doing splendidly for the cause. The boy scout-masters are also rendering valuable help, and their reports afford interesting reading, since the boys are in earnest and expect to win for their troop one of the several large flags that will be awarded to the scout organizations that can show the best practical results.

Another important branch is that of the utilization of chestnut. It is well known that chestnut trees killed by the fungus will deteriorate rapidly in quality, if not promptly marketed. It is for this reason that especial attention is being devoted to the subject of finding a market for the chestnut tree products. Large quantities of cordwood and other parts of infected chestnut trees will be sold to tannic-acid



SCENE SHOWING THE TOTAL DESTRUCTION OF CHESTNUT TREES BY THE BLIGHT.



CHESTNUT TREE ON FARM SHOWING
EARLY STAGES OF BLIGHT.

factories, as the leading railway lines conceded special low rates for carrying blighted chestnut. The utilization question is being investigated most carefully and thoroughly. Another important movement will be to display specimens of the blight at the various county agricultural fairs this fall. These will be in charge of demonstrators who will fully explain the nature of the blight and suggest remedial measures so far as practicable. As the fairs of Pennsylvania during the season of 1911 attracted 1,522,500 visitors, this educational plan needs no further commendation. The farmers' institutes of the State will also afford an excellent opportunity to acquaint the people with the absolute necessity for waging a continued and united warfare against the blight if any chestnut shall be saved.

The Pennsylvania State Forestry Department has rendered invaluable assistance in combating the blight. The State owns 1,000,000 acres of forest lands, and the foresters in charge are making every possible effort to eradicate the disease. Their efforts have reduced the percentage of infection on State lands to a very small figure. A greater and more earnest interest in the work is needed in all the States threatened by the disease. Pennsylvania

does not believe in impossibilities, and will continue to lead in this laudable but difficult task of eradicating the blight.

General Manager Carleton stated that within two or three weeks every county of the commonwealth will be represented by active agents in charge of conservation work. General Superintendent Detwiler has concentrated a large amount of work in combating the progress of the blight upon western Pennsylvania counties, and is greatly encouraged by the prospect that the valuable chestnut in that section may be saved.

The man who wears shoes, reads the magazines, rents a house, uses the telephone or telegraph, goes trolley-riding etc., has a material interest in the eradication of this new but deadly forest pest, hence, the vital importance of general co-operation. As a producer of lumber, the native chestnut tree has an almost incalculable value, aggregating many millions.

Lastly in its list of many virtues is its immense value as a producer of food for man, sheep, hogs and other live



DISEASED TREE SHOWING
SHREDDED BARK AFTER TWO
OR THREE YEARS' INFECTION.



TYPES OF ORNAMENTAL CHESTNUT TREES KILLED BY THOUSANDS.
NOTE THE SMALL DISEASED BRANCHES. SCENE NEAR PHILA-
DELPHIA, PA.



YOUNG TREES SHOWING POSTULES ON SMOOTH
BARK AND TYPICAL SPROUTS.



POSTULES PRODUCING GELATINOUS THREADS,
BEARING SUMMER SPORES (ENLARGED).

stock. The total value of the toothsome chestnut grown in the chestnut belt of the United States reaches almost stupendous figures.

The Secretary of the Pennsylvania Game Commission in his preliminary report for the present year refers to the threatened extermination of our native chestnut trees, through the ravages of the chestnut blight, and the serious effect that this loss of food for wild animals and birds would produce in this State.

Another authority declared that under proper care, our mountain lands could be made to produce a sufficient quantity of chestnuts to fatten all of Pennsylvania's hogs.

With ornamental chestnut trees situated on the lawns of country and

suburban homes that no money could buy, because of their historic associations, and allowing a minimum of only fifty cents for every chestnut tree in Pennsylvania, "there are millions in it," and it is no wonder that this State has taken a commendable lead in the endeavor to prevent the total extermination of the chestnut tree.

It is a vigorous campaign, but thus far Nature has succeeded in putting even the best scientists to the test in discovering a successful remedy. The pernicious San-Jose scale threatened to annihilate our wealth of fruit trees, but was conquered by the simple lime and sulphur solution; the codling moth and curculio have been subjugated, but this parasitic disease of the chestnut tree is baffling our vaunted skill, although, it is believed, only temporarily.

55,000 FOREST FIRE FIGHTERS.

More than a million miles of territory in comparatively sparsely settled sections of country will be covered daily by a forest fire preventive force of 55,000 men, as a result of an order issued by Postmaster General Hitchcock. These men are the rural and star route mail carriers, who are directed to co-operate with the forest rangers and State fire wardens in every way possible.

PROTECTING ELK IN WYOMING

WH. H. MILLER, of Cody, Wyoming, a recent visitor in Washington, said that Senator Warren has solved a problem which has been uppermost in the minds of the people of Wyoming for a great many years. He believes that the Wyoming senator has hit upon a scheme which will prevent the death of thousands of wild elk from starvation every winter, and, in addition, prevent these hunger-crazed animals from destroying the ranchers' haystacks and ruining their crops.

"For many years," said Mr. Miller, "the Jackson Hole region in western Wyoming has enjoyed the distinction of harboring the largest band of wild elk in the United States. The number has been variously estimated from 30,000 to 75,000. Each year has witnessed a diminution of the natural elk range on account of the influx of settlers, who fenced up the lands and planted large areas of crops. Each winter witnessed the elk driven closer to the ranches, and for the last five or six years the starving creatures have crowded through the ranchman's strong fences, laid waste his haystacks, and even devoured the rotting straw on the tops of his thatch-roofed sheds. Driven from the mountains by the heavy snows of winter, the elk were forced to the valleys to exist on swamp willows.

"To Senator Warren, of our State, belongs the credit for not only satis-

factorily solving this problem, but for evolving a plan whereby the elk ranges, long since barren, may soon become populated with sufficient numbers of elk to permit the hunter to have his annual fall sport within the confines of his own State."

"Senator Warren's plan contemplates the setting aside of a sufficient area in western Wyoming as an elk refuge where the animals cannot be hunted and where they may be easily fed during the severe snowstorms of winter. Each year a certain number of elk is to be shipped to ranges in other States until the number in the Jackson Hole region has been reduced to the carrying capacity of the range, after which only the increase will be taken away.

"Without disclosing the full scope of his scheme, Senator Warren has gone ahead working out its details and proving by actual demonstration the practicability of the plan. He first secured an appropriation of \$22,500 last winter, which sum was to be expended in caring for the elk and experimenting for permanent relief. As a result of this appropriation, experimental shipments of elk were made from Jackson Hole last winter to the States of Oregon, Colorado, Utah, Montana, and Washington. The shipments were successful, and the animals, turned loose on new ranges under proper protection, thrived."

A BOOM IN LUMBERING

American manufacturers of sawmill and woodworking machinery will be interested in the intense activity that prevails in the region directly adjoining the Ural Mountains, Russia, where promoters have turned their attention toward the unexploited riches of the place, and recently a number of companies have decided to work the immense timber areas on a share-holding basis. Many of the old firms have become share-holding companies, and others are forming every day. It is intended to develop the timber trade by the employment of up-to-date machinery. There is also a proposition to construct a rail line to convey to the coast the timber from the lands belonging to the Government in the Province of Turinsk.

BOY SCOUTS OF MICHIGAN

THREE thousand boys, marshalled into thirty companies of Forest Scouts, with the motto, "Keep the Right Trail," are now watching, with trained eyes, throughout the State of Michigan for forest fires, and are prepared, when any break out, to lend their aid in fighting them. They are under the banner of Michigan Forest Scouts are learned in woodcraft, know how to fight forest fires and are of valuable service in preventing fires.

Michigan is the first State to put the Boy Scout movement to a practical test in this manner.

The suggestion came from Governor Chase S. Osborn. Early in his administration he suggested that the Boy Scout movement in general amounts to but little except a pastime for the youngsters. He suggested at the same time that the movement could be turned to practical advantage to the State and to the boys themselves. He proposed the organization of the Michigan Forest Scouts, composed of the boys of every school district in the State. He proposed that they should be organized into companies under officers of their own selection and working in connection with and under the direction of the Michigan State game and fish and forest warden's department become of practical service in preventing the forest fires which have annually devastated the State.

The suggestion was made to William R. Oates, the game, fish and forest warden of the State, and C. A. Palmer, the State fire marshal. They immediately seized the idea and Mr. Oates has now organized the service, which is already an important and unique factor in the affairs of the State.

At this time companies have been organized in Harrisonville, Oscoda, Alpena, Onaway, Cheboygan and the Soo. Five hundred boys between the ages of 9 and 19 years are already enrolled. Other companies are being organized as rapidly as possible and 2,000 will

be in the service before the coming on of the dry season.

The first company was organized at Oscoda with Oscar Swanson, aged 16 years, as captain. That company has already been hard at work and is an efficient fire-fighting organization. J. H. McGillivray has been appointed supervisor in the field and is traveling all about the northern part of the State organizing companies and telling the boys and their parents the purposes of the organization. The forestry department of the Michigan Agricultural college has offered Mr. Oates the services of its classes in the summer to be camp supervisors in charge of companies of scouts, and the big lumber men and timber men from all over Michigan as well as the department of education are lending every assistance to the work to make it a big success. A pamphlet has been issued which tells the purposes of the organization and includes a manual and general information as to the duties of the scouts and best methods of combatting fire.

It is not the purpose of the organization that any boy shall risk his life in fighting fire. He is rather to be the courier who shall notify the fire warden in his immediate vicinity of the outbreak of a fire and give such information as may be useful in locating it and fighting it. However, if a small blaze is discovered and the company of scouts puts it out, that redounds to the credit of the company, and medals given by the State are rewards to each scout who does efficient service.

BECOME LOVERS OF NATURE.

But the scope of the organization is wide. It is not confined to fighting fires alone. The object as laid down in the manual says:

"The primary, economic object of this organization shall be the protection of frontier life and property, and reforestation. Its moral object the development of health, chivalry and ap-

preciation of the duties of citizenship; its general object, the dissemination of a knowledge of the importance of prevention of forest fires to the boys and girls of the State and through them to their parents."

A knowledge of woodcraft, care in the lighting of fires in the woods, protection of birds and animals as well as life and property are necessary requirements of the scouts. The real usefulness of the organization is best shown by the examination a scout must take before he can be enlisted.

He must pass a creditable examination on simple fire-fighting and first aid. In the manual rules are detailed and the scout must study and know the first aid remedies for snake bites, cuts, burns, poisons, sun stroke, drowning, being overcome with smoke and all dangers with which a person in the woods may come into contact.

He must promise to observe the constitution of the State and of the United States and memorize the preamble of the latter.

Know how to use properly knife hatchet, axe, shovel, mattock, flails of brush, sacks and blankets.

Know how to determine direction by a watch.

Know how to determine height of a tree.

Know how to tie a death grip, square fisherman's halter and lumber jack's single and double timber hitch.

He must either swim twenty yards walk one mile in twelve minutes, row an ordinary boat or paddle a canoe one mile in acceptable time, according to conditions.

He must know the general State open season for the hunting of game and taking of fishes and his own county game law exceptions, if any.

He must be able to distinguish and name three indigenous forest trees, three indigenous water plants, three indigenous ground plants, three domestic game birds, three migratory game birds that pass over Michigan, three game fishes, six fur bearing animals.

Draw or orally describe tracks left by three wild animals.

Name the approximate time for spawning of one species of fish.

Name the approximate time when one species of wild animal bears its young.

Name the approximate time when a deer's horns are in the velvet.

Name the approximate time when a deer sheds its horns.

Name the approximate period that a fawn retains its spotted coat.

He must know and name three township, three county, three State and three federal officers.

He must know the qualifications for United States citizenship.

He must know the names and addresses of the deputy fire wardens in his district.

These requirements, it is manifest will make a boy a fairly expert woodsman, it will give him an education along lines about which too few of the adults of today know much.

MEDALS AS REWARDS.

Medals of various classes will be provided by the State to be given to the individual boys for good service.

Medals of the first degree will be of approved metal composition and design and shall be known as the "honor medal." Medals of the second degree will be of gold and alloy composition and approved design and known as the "hero's medal."

Honor medals will be conferred upon scouts who have performed meritorious service to the State of Michigan in the saving of life or property, reforestation or advancement of the original and acceptable plans for the prevention of forest fires. This merit of service shall be certified by majority of the scout's own company certified to by his public school teacher and the supervisor of his township and approved by the field supervisor and the head of the department.

Heroes medals will be conferred for conspicuous bravery or good judgment in the saving of life or property.

Honor medals will also be conferred for the six best stories by boys and

girls of the public schools of Michigan which shall tell of the Michigan Forest Scouts or their work.

One honor medal of gold shall be awarded to the boy and one to the girl writing the best of the six stories, the stories to be selected by the head of the department.

Regulation honor medals will be presented by the field supervisor or an aid. Hero medals and first honor medals will be conferred by the governor in person or by a direct representative of the executive.

In addition to this W. B. Merston, one man in Michigan who perhaps more than anybody else is interested in the protection of the wild life of the State, has volunteered to provide medals for essays on the conservation of bird life.

There are still other ramifications since various organizations interested in some particular branch of the work are planning to offer medals for essays or for actual work along the lines of protection of game, fish or tree and plant life.

The Lower Michigan Protective Association is now being organized to patrol forest lands and prevent fires. Thomas B. Wyman, of Munising, is the expert in charge of the work and it is proposed to use the boys in connection.

HOW TO ORGANIZE.

To secure a charter, to become an enlisted company is an easy matter. It is provided only that five or more qualified applicants apply to the field supervisor or the head of the department and that one of the applicants chosen by his school teacher and elected by a majority vote of his company shall be captain of the organization.

The names of the companies shall be chosen from the names of distinguished American soldiers, patrols, frontiersmen, Indian chieftains, or of some American plant, tree or animal.

The arms of the scouts are flails, buckets, mattocks, axes and shovels. The ammunition is dirt, sand and water.

The boys will be taught the first aid methods of treating sunstroke, scalds, frost bites, snake bites, poisoning, drowning, wounds of all kinds. They will be taught how to build safe camp fires and instructed in the necessity of extinguishing them. They will be instructed in how to cook in the woods, how to extinguish a forest fire, the methods in which forest fires run and how to avoid being overtaken and overcome. They will be taught the art of back firing without damage to other property, of building fire lanes and of protecting property when fire bears down upon it.

But his chief duty is to notify the proper authority of the advance of a fire. The chief township warden is the supervisor of that township and any justice of the peace is also a fire warden in his township. The scout is asked to bear in mind that the State does not require nor ask him to risk his life or limb in service. It is the scout's duty to care for life and property. His own life is held by the State to be vastly more valuable than property and as valuable as that of any other person.

If one or more scouts have knowledge of a forest fire it is the duty of the one having the first knowledge to dispatch a warning to a township warden. He is asked to make an intelligent report along these lines:

The kind of material in combustion.

The approximate area of destruction.

The probable area of destruction.

The possible area of destruction.

The establishment of a fighting line.

The means for fighting; water, sand or earth, flails, brush or water soaked sacks or blankets, fire lanes, etc.

FIRST FIRE EXPERIENCE.

Already Wolverine company, the first to be enlisted and under the command of Capt. Oscar Swanson, has been through the mill. It was in the district controlled by this company that a great fire swept all before it last year. Untold damage was done and hundreds were left homeless and starving. Young

Swanson, but 16 years of age, already knows the woods and knows the terrors of forest fire-fighting. He is a self-reliant lad and his company, the first of the Michigan Forest Scouts, is carefully drilled by him every way he can think of to make it an efficient fire-fighting force.

He gave his company a little test recently. A great pile of dead brush was situated in a clump of pines. He set it on fire in several places. Then he gave the alarm.

"Secure shovels," came his command.

The company promptly appeared in good order and armed with their shovels.

"Forward, at will!" he commanded. The boys came down upon the blaze like a Marathon.

"Shovels at will," was the next command. In an instant every shovel was dug deep into the snow and the snow was sent hurling upon the blazing brush pile. Like nailers the lads worked. They know their business. They stood on the windward side of the brush heap, away from the smoke and flame, yet where they could keep up that shower of snow dealing death to the flames. Two minutes and only steam rises from the brush pile. The captain stood back and proudly surveyed the work of his company over which he had command and which he had kept well in hand.

"That's the way we do it now," he said. "If it were summer time, sand would do the work quicker than snow." Then he told of his plans for the season which all northern Michigan looks to with dread.

"A grass fire? Yes, that's the way most of 'em start. But, pshaw! That's nothing, when you know how—providing it's a small one of course. And we figure on getting most of 'em before they get any size.

"We just cut or tear off a big pine or cedar branch and whip 'em to a frazzle. We get behind to the windward where it's safe. Then we whip along the sides and it keeps a dying down as we gain on it, till we meet in front. Then it's out.

"What'll we do with a great big fire? Why, there won't be any. That's what the scouts are for—to put 'em out when they are small. But if there should happen to be a big one, we would report it to the township fire warden and he would organize to fight the blaze. Most of the fires start when it's vacation in school and that's when we can watch for 'em.

"When there are no fires? Why then we'll put in the time cutting fire lanes to protect the towns and farm houses, and trimming the useless branches off'n the trees so the sap will go into the trunk and make 'em grow faster. Pretty soon we'll have our forests back again."

COST OF FOREST FIRES.

Young Swanson is an enthusiast and it is apparent he has had the necessary experience to make him an efficient officer. Forest fires in Michigan during the year 1911 did damage to the extent of \$3,567,438. They broke out in thirty-six counties of the eighty-three in the State. They left villages desolate and resulted in tremendous loss of life as well as property. They ruined thousands of acres of hardwood, meadows, slashings and swamp lands and made it necessary to call out the National Guard to care for the persons afflicted.

It is believed the organization of the Michigan Forest Scouts will be a potential force in preventing repetitions of such devastations. All the benefits will not be reaped in this generation. For one of the important features of the work is to teach young men how to build camp fires without endangering the surrounding growth. When these boys grow up and become campers their lessons in woodcraft will have been learned. They are taught to see and extinguish the blaze in its incipency. This lesson will never be forgotten and in future generations the people of Michigan will reap the reward.

William R. Oates, State Game and Fish and Forestry Warden, is most enthusiastic over the movement. So is Governor Osborn, who devotes not a

little of his time to working out of the plan.

"I don't know when I have found a more interesting feature of my work," says Mr. Oates. "The boys have found in it an occupation for usefulness which makes their camp life and their trips into the woods of vast interest to them. I believe it will work out into one of the best movements for the boys and for the State generally that has ever been attempted. Michigan is the only State that has ever tried such an experiment, and I believe I see in it the seed which will make Michigan eventually stand out as one State in which the dreaded forest fire is most nearly removed. We are receiving the earnest co-operation of the lumber interests, protective associations, newspapers and school boards all over the State. The boys are very

enthusiastic and deeply interested in the work and I feel sure that they will render us considerable practical assistance in the suppression of forest fires if we are unfortunate enough to have any this year.

"It also seems to be unanimously conceded that the movement has splendid educational possibilities, not only along forest fire lines, but reforestation and other work which makes for good citizenship. We believe that the school boy can assist this department immeasurably, not only in the matter of reporting and suppressing forest fires but conserving our wild life. As will be observed, we offer awards for stories of bird life, etc. We are hopeful that we will have the boys of the State pretty well organized by the end of the summer."

THE FOREST SERVICE APPROPRIATION

THE passage of "An Act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1913," was delayed until nearly six weeks after the beginning of the new fiscal year, during which time appropriations were made for short intervals pending the passage of the bill. The chief cause of the delay was a difference of opinion between the House and the Senate on an amendment affecting the Forest Service. The Senate wished to direct the Secretary of Agriculture "to select, classify, and segregate, * * * all lands within the boundaries of the national forests that are suitable and fit for agricultural purposes," in order that such lands shall be open to settlement and entry. The conferees having charge of the bill reported a substitute for the Senate amendment limiting such lands to those "that are chiefly valuable for agricultural purposes and that are not needed for public purposes or for use by the public," and further proposed that the lands thus segregated

"shall be open to settlement under the homestead laws applicable to the national forests." The Senate, however, refused to adopt the substitute. The conferees finally reported the following amendment, which was agreed to by both the House and the Senate: "That the Secretary of Agriculture is hereby directed and required to select, classify, and segregate, as soon as practicable, all lands within the boundaries of national forests, that may be opened to settlement and entry under the homestead laws applicable to the national forests, and the sum of twenty-five thousand dollars is hereby appropriated for the purposes aforesaid."

The "homestead laws applicable to national forests" at present consist of the Act of June 11, 1906, and its amendments, which provides that the lands open to agricultural settlement shall be chiefly valuable for agriculture and, which, in his (the Secretary of Agriculture) opinion, may be occupied for agricultural purposes without injury to the forest reserves, and which

are not needed for public purposes, and may list and describe the same by metes and bounds, or otherwise."

The only new element introduced in the amendment passed is that it carries an appropriation which will enable the Forest officers to classify the lands chiefly valuable for agricultural purposes prior to the filing of application for them by settlers. This is wholly in accord with the policy of the Forest Service, and only the lack of funds hitherto has prevented any extensive classification of such lands.

It was believed that the amendment proposed by the Senate contained elements of vagueness which were capable of endangering the interests of the public. It seemed possible that lands chiefly valuable for timber, timber growing, water power development, reservoir sites and other uses, but possessing secondary or even slight agricultural possibilities might be required under a strict interpretation of the proposed law to be opened to private exploitation, in which agricultural possibilities would be only a pretext for acquiring title.

An improvement over past appropriation laws is in the provision that no land listed for agricultural settlement under the Act of June 11, 1906, shall pass from the Forest until patent issue. Formerly it was held that land thus listed even though unoccupied or abandoned was forever alienated from the Forest.

The new law carries an appropriation for the administration of the Appalachian forests now being acquired.

Although a number of Assistant Forest Ranger positions have been dropped from the statutory rolls the money available for salaries will permit the temporary employment of more than that number of Forest Guards during the fire season.

An analysis of the sums carried in the appropriations shows a slight decrease this year, as shown in the following:

	1911-1912	1912-1913
Salaries	\$2,318,680	\$2,235,760
General Expenses	2,714,420	2,707,285
Permanent Imp.	500,000	400,000
Total	\$5,533,100	\$5,343,045

Permanent improvement money in the new law is considered a part of the general expense moneys, but for purposes of comparison it has been segregated.

Further comparison of sub-allotments is as follows:

	1911-12	1912-13
Fires and emergencies.....	\$150,000	\$150,000
Equipment and supplies....	198,080	155,000
Investigations in wood distillation, preservatives, paper making, timber testing, etc.	177,040	170,000
Grazing investigations	18,420	20,180
Market and miscellaneous investigations	33,760	31,360

The 25 per centum of gross revenues will be turned over to the States in which National Forests are located to be applied to the road and school funds, as in the past. The new law provides. "That an additional ten per centum of all moneys received from National Forests during the fiscal year ending June 30, 1912, shall be available at the end thereof to be expended by the Secretary of Agriculture for the construction and maintenance of roads and trails within the National Forests in the States from which such proceeds are derived, but the Secretary of Agriculture may, whenever practicable, in the construction and maintenance of such roads, secure the co-operation or aid of the proper State or Territorial authorities in the furtherance of any system of highways of which such roads may be a part."

While the ten per centum will be expended in building roads and trails primarily for the use and convenience of forest users and those traveling across the Forests, in most instances these public improvements will greatly assist the Forest officers in transacting their business and in further protecting the Forests and rendering them of wider use.

While a larger appropriation could have been wisely used, the new appropriation law, carrying practically the same sums as last year, is probably sufficient to the Forest Service.

INSTRUCTIONS IN TIMBER ESTIMATING

By EDWARD C. M. RICHARDS, Ph. B., M. F.

WE of the Senior Class of the Yale Forest School had always heard that timber estimating was a very peculiar part or branch of the lumber business. There seemed to be something mysterious about it. We had always understood that the best cruisers were men who had lived in the woods for the greater part of their life and perhaps had even been born there. It seemed hardly possible that a lot of men who had lived in cities and large towns for the most part could reach a point where they could claim even a fair knowledge of the art. For besides the seeming necessity of having to have lived in the woods for the greater part of one's life, still there seemed to be something weird connected with the work. We could not have told just what it was or where we had gotten the impression, but it was there nevertheless. Imagine our surprise, therefore, when one morning last spring while we were camped along the I. & G. N. Railroad near Trinity, Texas, our instructor told us that anyone with careful attention to detail and a lot of hard, but carefully directed work, could gain a very fair knowledge of cruising as it is done by the best of the men who make it their life work. He said that it was not necessary that men live in the woods all their life to gain skill and accuracy, but that one thing amongst others that men of this class had which fitted them for the work better was the experience which they had had as regards the allowance for the defects which are found in timber. This would have to be learned by experience that all of the methods of work and a considerable amount of the skill required to carry out these methods could be learned by us in the time which was allotted for this purpose.

A fairly brief summary of the course of instruction which we went through is as follows:

The country about Trinity had never been covered by the Government in their rectangular survey, and, therefore, all of the surveying which had been done had been done in small and very irregularly shaped areas. Some of these surveys were as much as a hundred years old and in many cases it was very hard for us to locate the old lines. A regular crew had been at work at this for some time, however, before the estimating started and the boundaries had assumed a recognizable aspect in practically all cases. But for the practice work in cruising we laid off two sections of land which were assumed to be numbers 1 and 36. This made the line separating them a township line and the east end of this line was the township corner. The lines around these two sections were blazed as were the lines in each, dividing them up into "forties," and ten-acre plots. In this blazing work the trees were blazed on the side facing the line and a single horizontal crayon mark was made on each line blaze. Trees which were directly on the line—"line" trees—were blazed "fore and aft." The corners of the forties were staked and each stake was marked with crayon so as to locate it with regard to its position in the section. Along the lines dividing the sections up into forties, stakes were set at distances of 330, 660 and 990 feet from the corners and each stake here was also marked, giving the position as regards its location in the forty. These stakes were for the purpose of enabling a compass man running across the forty to check himself up quickly and easily during the practice work. All of this work was done with a steel tape and a staff compass and care was taken to do the work of setting stakes correctly as we all were to use this sample area for some

time and therefore it was best to take pains and lay the work out well.

As all of the work in the field had to be done by pacing, therefore of course the work on the practice sections had to be done in the same way. But most of us had not paced very much and those that had done so had gotten out of practice. Professor Chapman therefore placed the corner of the imaginary township exactly one mile—by steel tape—from a certain point on the railroad track in front of the cook shanty, and set a stake at each quarter of a mile. Every morning as we went to work and every night when we returned we paced off that mile, and as the work lasted for a number of weeks, by the time we were ready to go out on the actual field work we knew our pace very well and, what is much more to the point, we became used to pacing and had learned a lot about regulating our pace over different kinds of ground.

After laying off the forties crews were sent in on each of them to tally the merchantable timber. In this work the crews worked in strips calipering every tree of merchantable species—short leaf or loblolly pine—of a diameter greater than 10" at breast height. One man of the crew tallied the diameters of the trees as they were calipered by the others. As a tree was calipered the man who calipered it called out the diameter to the tallyman and then blazed the tree to show that it had been tallied. The trees were blazed on the East side for the West half of the forty and on the West side for the East half of the forty, so that any tree which was above 10" D. B. H. and which had not been calipered and tallied could be easily found by walking down the central line of the forty and looking on both sides of the line. In measuring these diameters the scale of the calipers was read only to the nearest inch.

While this work was going on two men of the crew were taking height measurements with Faustman Height Measures, recording the merchantable height of the trees along with their D. B. H. In doing this work the men

were cautioned to get as many heights as possible but to be sure to get the heights of all of the very large trees and to distribute the rest of the heights over as wide a range of diameters as convenient. These heights were in the form of the number of sixteen foot logs in the tree allowing about sixteen inches for the average stump height. Every man on every crew had to perform each of these jobs so that we all had a fair chance at the work as it progressed.

The idea of doing all this blazing and measuring was to get as accurate an estimate of the standing timber on each of the forties as possible. From the D. B. H. tally we got a complete tally of the number of trees of each diameter on the forty and from the height measurements we got an excellent idea of the number of logs in trees of all diameters.

From the above data estimates on the contents of the different forties were worked out by means of a volume table based on the D. B. H. and the number of logs in a tree, and this set of estimates was assumed to be as nearly correct as it was possible to get them with reasonable amount of work. And in addition to the estimate, a tally was made of the number of trees of each diameter and of each height—in number of logs—on every forty. This was used as a checking system for our work and proved very valuable.

When all of the above work had been finished, the actual work on the practice forties began. The method was about as follows:

At first crews of six men were sent out on the sections. These crews consisted of a compassman, a checker and four estimators. Each crew ran strips ten rods wide back and forth across the forty, making one strip just touch the next one and in this way covering the entire area the first time the forty was run. After the forty had been run once, the crew turned about and re-ran the same forty again. The reason for this was because on the first running the cruisers walked on one side of the man with the compass

and stayed on that side while the forty was being run. He tallied the diameter and number of logs of every tree on the strip between himself and the compassman of all trees which had blazes on them—showing that they were above 10 in diameter. At the end of the forty each estimator had the complete tally of all of the trees on half of the area. On the re-running of the area the men changed over to the other side of the compassman and in this way got a tally of the rest of the forty.

The compassman merely had to run the compass and pace off the different distances across the forty so as to check up on his pacing, while the sixth man or checker carried a pair of calipers and a height measure and his work was to check up the estimates made by the others in diameters, heights and in the width of the strips which they were running—i. e. the distance between the estimators and the compassman. At the end of the day's work each of the estimators worked out his own tally and determined his own estimates of the amount of standing timber on the forty. He also had to add up on his tally sheets the number of trees in each height and each diameter class. When he had done all of this he went to the instructor to check up his work. This checking was very well arranged, for by this system a man was not only able to find out how nearly his total estimate of the stand came to the assumed true estimate, but he was able by comparison of the tallies of the diameter and height classes, to get a very good idea as to the errors that he was making in his work and what he had better do to correct them. For instance a man might come out fairly close in his total estimate for the forty, but, on checking up his work with the diameter and height tally, might find that he was over estimating his diameters—which gave him larger logs—and underestimating his heights—which diminished the number of logs just enough to make the total estimate look very well, whereas the real work was far from being good. In this way we were checked up day by day and the improvement in the work of the men

was marked after we had got the hang of the methods.

This sort of work was, of course, altogether too slow for practical cruising and was really used with the idea of getting our eyes trained to the estimating of the diameters, heights and distances and to give us a little idea of the sort of work we were to do. It lasted only a short time, for within a few days we began to alter the method by which we ran the strips across the forty and to use some of the other systems of covering the area. The different time-saving methods which we took up and gave a good trial were some of those well known to cruisers such as the "log run" method, methods of widening or narrowing the strips, counting all of the trees on the strips, but tallying only one in five; making of a topographical map by the compassman while the work was going on and other methods and schemes to help make a cruise more speedy and more useful. All this work was done on the sample forties and of course we were shifted about every day so that we should not have to use the same forty twice in succession. The check man soon was eliminated and each estimator had to carry his own calipers and do his own checking. And always we had the checking up system with the instructor in the evening.

Finally individual cruising was introduced and we had to run the compass, keep track of the pacing, count and tally the merchantable trees all by ourselves. Here we also tried the sample acre system, the "Ward" method, and other schemes of getting the contents of stands. But through it all we had to check our pace twice a day, our estimates of diameters with calipers and our tally of heights and diameters in the evening.

At the end of two weeks of this practice work the actual work of cruising the timber for the Lumber Company began. A somewhat brief outline of this work is as follows:

As stated in another part of this article, the country around camp was not surveyed by the governmental rectangular survey and was broken up into

countless small irregular surveys ranging from patches of fifty to sixty up to tracts covering several hundred acres. Much time had to be spent by the "landline crew" in re-running the boundaries of these tracts and as in many cases the original work had been done a great many years before, a good deal of trouble resulted. Finally all of this work was done and the whole region which was to be estimated was mapped to the scale of 2,000 feet to the inch. Then small maps or tracings were made of the different areas which each crew was to cover in detail. These tracings covered on the average about three sections of land—1920 acres—and the crew was required to estimate the timber, make a topographical map to the scale of 2,000 feet to the inch and which gave the elevations in 10-foot contours, collect a description of the different types of the forest found on the area, and hand in a written report on all of this material. The time allowed for the whole work was one week.

In doing this work the tracing map area was divided up into "blocks" of as nearly 160 acres in size as possible. Each of these blocks was estimated separately—using different tally sheets for each, but running the compass lines right through all of them, and then by adding up the different estimates for the blocks, the contents of the whole area was gotten.

The crews were made up with three men in them as a rule, but in a couple of cases two men crews were used. Each crew had for equipment a staff compass, two pairs of calipers, a tracing map of the area to be covered, note books for the daily tally of trees, erasers, pencils, scales graduated to decimals of an inch, canteens, blazing hatchets and haversacks for carrying lunch.

One man ran the compass for one-third of the time while the other two estimated and took notes on the forest. The former also had to make a topographical map as he went along. The cruisers—as differentiated from the compassmen—had a tally sheet made out in their note books in which they

recorded the trees tallied under diameter breast high and the number of sixteen foot logs to half log lengths. The method used was the parallel alternate strips and 50% of area was to be covered. The various shapes of the areas covered necessitated running the strips in various ways, but the per cent covered had to remain approximately the same. For the two-men crews, however, the per cent covered was only 25. The compassman ran the lines across the tract parallel to each other and the two estimators walked on either side of him, each counting all of the trees on the strip lying between himself and the compassman—5 rods—and also on a 5-rod strip on the other side, of 10 rods in all and 20 rods for the crew. All merchantable trees were divided into two classes—"Pine" and "Others." In the case of the former or the "Pine," every fifth tree counted was tallied, the tree nearest the cruiser being the one tallied in every case, according to the diameter breast high and the number of sixteen foot logs. In the class of "Others" belonged the gums, cottonwoods, sycamores, oaks, etc., and they were tallied log by log, the number of trees being so much less than in the case of the "pine" that the "one in five" system was not necessary, and also as we had no volume table adapted to such trees every log had to be tallied separately.

In addition to the above data, it was necessary to take notes for a forest description. This was to cover the per cent of the different species present, the average clear length of bole, the form of the timber—whether knotty, crooked, etc.—the amount of damage done to the forest by fire, insects and rot and data which might come up in the course of the cruise. The amount and condition of the young growth both of pine and others both in the forest proper and on any old fields or deserted clearings also was required. And finally the condition of the reproduction—as differentiated from the young timber—and some idea as to how the different species reproduced themselves in different parts of the area covered.

It was found that in working of the shortleaf pine uplands it was possible to run about four miles of line in a day and collect all of the above data, thus covering 320 acres.

From every standpoint the work was a success. We had a chance to learn a great deal about locating old lines in the woods, of mapping in a wooded country, and other things which go far

in making a man efficient in woods work. But most of all we gathered an idea of how timber estimating ought to be carried on, and found ourselves finally able to make a respectable showing in the work. We had a very fair idea of the shortleaf pine country when we finally said good bye to Trinity and started for the North.

CANADIAN FORESTRY MEETING

THE Forestry meeting which is to be held at Victoria, B. C., Sept. 4, 5 and 6, is the Fourteenth Annual convention of the Canadian Forestry Association which meets in British Columbia upon the invitation of the Government of that province. This is the first time since 1906 that the Canadian Forestry Association has met further West than Regina, its gatherings having been held in the interval in the big eastern lumber centers such as Toronto, Ottawa, Montreal, Quebec, and Fredericton.

One of the chief subjects of discussion will be furnished by the new forest law which has just been enacted by the Government of British Columbia, and the organization and scope of the British Columbia Forest Service now being established. The relation of this law and this service to the lumbermen in the mountains and on the coast, and to the railways will be set forth, and some points, no doubt, keenly debated. The Government is taking a keen in-

terest in this convention owing to the immense importance of the forests of British Columbia and the large revenue which they bring in to the province. Sir Richard McBride, the Premier, and Hon. W. R. Ross, the Minister of Lands, will address the Convention upon the law as it affects their departments. The lumbermen and the railways will be well represented by those qualified to speak from their respective positions. Quite a large number of prominent men in forest administration and lumbering are expected to attend from Eastern Canada, as well as from points nearer the Pacific Coast, and a number are also expected from the United States.

It is proposed to begin with a reception on the evening of Sept. 4, followed by regular sessions in the mornings and afternoons of September 5 and 6, concluding with a banquet on the evening of September 6. Delegates from the United States will be cordially welcomed and given full opportunity to participate in the discussions.

IRRIGATION FOR NEW SOUTH WALES

Mr. N. R. W. Nielsen, formerly minister for lands, who represented the New South Wales Government at the Chicago Irrigation Congress and afterwards conducted an investigation into the irrigation methods of the United States, has issued a report in which he says that the eastern coast of Australia can be made quite as productive as any similar area in the United States or Canada. He recommends that the Government undertake extensive irrigation works, declaring that the cost of these would be amply repaid.

WON FOREST FIRE FIGHT

THE story of a strenuous and stubborn fight against a forest fire which raged over 24,000 acres and did damage to the extent of about \$30,000 is that brought back from the Sitgreaves National forest of Arizona, in the Third district, by Assistant District Forester F. C. Pooler. It is a story which includes an eighty-mile gallop from Snowflake, Arizona, by a dozen rangers in twenty-four hours over rough country, a night and day struggle amid sizzling heat and acrid, blinding smoke to drive back fierce flames which, driven by high winds, often leaped hundreds of feet at a time. As high as forty men, including assistants from ranches and cow camps, were engaged for many days trying to head off the fire, and the entire expense to the service in extinguishing the blaze was about \$1,700.

Putting out the fire, which had a circumference of some thirty miles, was made the more difficult by the fact that the scarcity of rain had made things extremely dry and that the sheep had not yet been brought in to this district, the Chevalon district, of the forest for their grazing; and because only from fifteen to eighteen ranchers reside in the whole district.

The fire was started by lightning and because of the sparsely settled nature of the country would have swept an enormous area but for the forest service organization and the fact that seventy miles of telephone line have been installed in this region by the government in the past year.

The Sitgreaves forest is 893,720 acres in extent and the density of the timber is indicated by the fact that half a million dollars worth stood on the burned area, the total loss being comparatively small in proportion to the aggregate of standing timber. A few cattlemen joined the forest service employees in the fight, although it is said

one large outfit that could have furnished a dozen men failed to do so.

Delay in reporting the fire resulted from a curious incident. The lookout who climbed with his spiked climbers to the top of a 110-foot tree to take his daily reconnaissance saw and reported a fire on the Coconino forest, adjoining, on June 7. Directly in line with this fire was the smoke from the incipient conflagration on the Sitgreaves, which smoke appeared to be a part of that from the Coconino and it was not until the next day, June 8, that the lookout telephoned in the report of his own fire which by that time was well under way.

The first report came in to the ranger station at 8 p. m. and next morning at 1 o'clock a force of fire-fighters was on the scene, the aid of a few local residents being secured. June 10, after the rangers had been fighting desperately night and day to head off the blaze, a call for help was sent in to Snowflake and Supervisor Jennings, of the Sitgreaves, with Mr. Pooler and a dozen rangers, hastily saddled up and "hit the trail"—and a very rough trail at that—for the fire, making the eighty miles in twenty-four hours, arriving at 4 in the evening, eating a hasty lunch, starting to work and eating nothing until well into the next day. All that night, all the next day and all the next night the little force worked without rest. The fire was burning on about 5,500 acres when the officials arrived.

The fire would apparently be checked when at noon every day a high wind would spring up and by 3 o'clock the heat would be so intense that the fire-fighters could not approach it, blazing bark being hurled five hundred feet before the wind to start a hundred new fires ahead of the main front. Finally a fire line a quarter to half a mile wide was run from Leonard canyon to Willow creek, which checked the ad-

vance of the flames, this fire line being about four miles in length. All this was cleared out in one day's time, which is believed to be about the record time for such a performance over so large an area. For three days a total of forty men was at work, when the force was then cut to fifteen or twenty.

The damage to green timber is estimated at \$15,000, and in reproduction at \$15,000, a total of \$30,000.

While the forest service men don't say much about the details of the fight a few meagre particulars indicate that it was a fierce one. Camp was pitched at what was considered a safe distance from the fire, which, however, was right on top of the bivouac in an amazingly short time, strenuous work being necessary to keep the camp site and a square mile of feed for the horses free of fire. On every side of this square mile the fire was raging. No serious injury to any of the fire-fighters, however, is reported. The task which confronted them is shown by the estimate that an army of 400 men could not have checked the advance of the flames in the afternoon when the wind was fanning it.

The army emergency ration was tried out at this fire but found unsatisfactory for fire-fighters while at work because of its dryness. Water had to be hauled some distance to supply the rangers and they drank gallons of it. Spellmire and Lyons, of Winslow, furnished a part of the force of men at work.

Supplies and tools which had to be hauled part of the way and packed part of the way were on hand and ready. Arrangements are now being made for connections with the military telegraph line which runs through this section, and the installation of the telegraphones throughout the forest for use on that line. Last year there was no telephone wire on the forest and the building of seventy miles this year indicates the extent of the fire protection measures being taken by the service.

The supervisor at present can call up any of his rangers over the telephone, but the telegraphone service will make

communication much more complete. A considerable sum will be spent this year in further trail building and improvement.

The number of tree lookouts will be increased and these will be supplemented with lookout towers with triangulation to secure exact location. How useful these lookouts are is demonstrated by the fact that in another district of this same forest where there are natural points of vantage in the shape of bare peaks, twelve fires were reported by the lookouts and extinguished with a total expense to the government of \$50 and damage only nominal.

Six rules have been printed on placards and sent out from headquarters to be placed in hotels at the Grand Canyon, Flagstaff, Williams, Santa Fe and other places where the forest-using public may see them. The placard is as follows:

The Six Rules for Care With Fire in the Mountains:

If every member of the public strictly observes these simple rules the great annual loss by forest fires will be reduced to a minimum.

1. Be sure your match is out before you throw it away.

2. Knock out your pipe ashes or throw your cigar or cigarette stump where there is nothing to catch fire.

3. Don't build a campfire any larger than is absolutely necessary. Never leave it, even for a short time, without putting it out with water or earth.

4. Don't build a campfire against a tree or log. Build a small one where you can scrape away the needles, leaves or grass from all sides of it.

5. Don't build bonfires. The wind may come up at any time and start a fire which you cannot control.

6. If you discover a fire, put it out if possible; if you can't, get word of it to the nearest United States forest ranger or State fire warden as quickly as you possibly can.

A TREE

By BURT W. JOHNSON

IN front of a roaring fire an old man sat watching the flames that devoured the huge knotted back log. Little flashes of light danced across his stern features as the flames leaped savagely over that piece of the fallen monarch. And as he sat, the old man mumbled to himself: "That sugar-tree ought to keep me warm nigh on to Thanksgivin'." Giving the log a vigorous poke he leaned back contentedly in his armed rocker. He had cut the tree and piled its wood in the shed, and maple surely does make a good fire.

Suddenly the old man ceased rocking and the firm lines of his face softened, a slight flash of pain crossed his features. His gray eyes were looking far beyond the flames from the log. He saw a tall, majestic tree standing near the middle of the road, its thick branches reaching beyond a rail fence on the other side.

Then he thought of the little yellow-haired boy who had so often climbed among its branches in search of a fork, or only to see how many eggs the robins or doves had. Of the kindly old man who had said with pride: "Ain't she a beauty, Jamey, I tell ye, my boy, she ain't never agoin' to be cut while I am here. No siree, for Lord, where would the birds build their nests next spring? Just think of lame Tom a comin' up the dusty road all hot and clean tuckered out a peddling of his trinkets. Where would he rest? She is a friend in need, my boy, and they are mighty few these days, a shelterin' bird, beast and man."

The man before the fire began to rock slowly. Yes, that old gentleman had been his father, and he the boy. Now the boy had grown to be an old man, and some said like his father. They looked alike, to be sure, the same thin nose, square chin, and eyes—no, the eyes were not the same, for the father's had been of softest blue that were filled with tenderness and sym-

pathy, and the son's a cold, steel-grey without a trace of pity.

Yes, this is the same stern man sitting in his easy rocker, gathering memories from the glowing coals of a fire; yet the eyes are no longer steel, but soft and tender. Tears have stolen from a forgotten source down upon the grim old cheeks, and glisten in the firelight. Taking the tongs from the hearth-stand he slowly turned the burning log over, bringing a large knot into view, so shaped as to form a pocket with the body of the tree. In this same pocket he had once found a wren's nest and in it two speckled eggs.

"Guess no wren will build in that hole next year. You were a fine big tree."

The old man's voice trembled as he addressed the now smouldering remains of the tree. "That artist fellow that painted ye seemed almost to worship ye. I recollect his sayin' suthin' 'bout ye bein' an inspiration to mankind. He went on like that for quite a spell. Guess he thought quite smart on sich things."

For a long time the only sound in the room was the sizzle of sap in burning wood, and the creak of rockers on the floor. Outside the wind blew cold around the corners of the house and through the naked trees. A long cold winter was expected and started. "It keeps a body busy fightin' off the cold. Haven't time to think how things look." The cold wind outside had caused these thoughts. The memory of the summer brought others, these he began to mumble aloud, breaking the silence.

"No, it won't make much difference now. But when the sap begins to run, the birds come huntin' a place to build in—it'll be burnt and the ashes layin' out in the orchard. Wonder what that artist will say? He said he would be back next summer. Well," and the old man put his feet down with a thud, "whatever he says I'll tell him that the

tree was in the way and—I needed wood.”

He carefully covered the coals with ashes and started for bed. It was late. He could not remember sitting up so late for years.

The winter, as predicted, was a “freezer” even for New England, And Spring, late in coming, was welcomed by all. Soon the bitterness of winter was forgotten. The summer became as hot as the winter had been cold. The old bachelor’s house stood back among the locusts as always. The little vine-covered porch was the same. There was the orchard behind the arbor.

Something seemed wrong to the traveler as he plodded up the dusty road in the merciless sun, looking expectingly for shade. Now he understood the change in the familiar old place. A landmark, a pioneer of the country, a friend, had been taken from this place. There was the stump. The sun seemed to beat down even hotter where the branches had once shaded.

“Who could have done it? That old heartless skinflint? What would his pa say?” The traveler looked bitterly toward the house. “What is that?” Near the edge of the road, carefully protected by white stakes, a young sugar maple had been planted.

NORTHWESTERN FOREST FIRE CONDITIONS

JULY passed practically without forest fire loss, August begun with unusually favorable conditions and better equipment than ever before by all protective agencies except the federal forest service, which is hampered by congressional delay in acting upon its appropriation, is the summary of a statement issued early in August by the Western Forestry and Conservation Association upon advices received from all protective headquarters in the Pacific northwest. Due partly to the weather but also to the perfection of preventive measures which, like the block signal system on railroads safeguard without being spectacular the situation is novel in that the middle of the usual four months fire season has arrived and there is not a single fire of importance to report.

Although small fires are becoming numerous, green timber is not dry enough to carry them unless strong wind prevails and the patrol forces are handling them promptly. The season has been favorable for disposing of dangerous slashings and never before has there been such system and success in extinguishing smoldering logs and

snags left after burning to become a menace later. On the other hand, the growth of grass and underbrush has been so heavy as to threaten peculiar danger from now on. Marked improvement in care with fire is reported, although there is considerable complaint against careless leaving of debris by county road builders and against the operations of small and irresponsible loggers.

The State Forester of Montana has received \$3,500 from the federal government through the Weeks law to be used outside the national forests in the territory protected by the State and the Northern Montana Forestry Association.

Idaho has had a few small slashing and lightning fires but practically no damage. The co-operative patrol associations have completed several new telephone systems and are rapidly increasing patrols to meet expected dry weather.

Washington reports no July fires of consequence, but the laws are being enforced rigidly to prevent danger later. Several attempts to burn without permit or operate unguarded en-

gines have been followed by prompt arrest and conviction. The Washington Forest Fire Association has 90 patrolmen out and is devoting special attention to finding and extinguishing any fire left after spring slash burning. The State Forester has 27 regular wardens on duty and is increasing this force gradually, besides having a special force of 35 secured by government aid under the Weeks law.

Oregon had but one fire worthy of mention in July and this was speedily extinguished, without loss, by the Columbia County patrol association. About 350 wardens are on duty in the State outside the national forests, employed by State, counties and private owners.

Although the usual fire season is half over, Congress has made no appropriation for the federal forest service. The national forests are being guarded on a deficiency fund, which it is said would be wholly inadequate in an ordinary season, but so far there has been little loss.

It is emphasized by all authorities that, while the immunity enjoyed so far shortens the dangerous season and has permitted careful preparation, a few hot drying days may bring the maximum hazard at any time now. All persons are urged not to attempt slash burning and to exercise great care with sparks, matches and camp fires.

EARLY LUMBERING

THE early experiences of an old lumberman are told by John Swan, of Clay, W. Va, in a letter to the editor, in which he contrasts the past with present conditions. He says: "I was born in Clearfield County, Penna., December 4, 1845, and my father was a lumberman. I followed his foot steps. Father's first experience was making square timber from the white pine forest in the old home county, which was covered with the finest trees that man ever looked at. Father made his timber 30 to 50 feet long and they were almost perfect. When he came to the knot he cut it off, and what a waste there was left to rot and make food for the forests' great enemy, fire. Father hauled his product to the Susquehanna river, rafted it to Port Deposit. There it was made in to floats and taken to Philadelphia and New York through the canals, and was sold for 6 to 8 cents per cubic foot. Then the men who helped do the work walked back to their forest homes, 200 to 300 and more miles. When I was a man the same process was gone over with this addition: we ran the lengths from 30 to 90 feet long and hauled to the same beautiful Susquehanna river, only the distance was from four to eight miles and we received anywhere

from 15 to 35 cents per cubic foot. We then got into a train and rode to within eight to ten miles of our homes.

The mighty giants are all gone now and when I pay a visit to the old home I find the beautiful forest destroyed, fire havng eaten up what man left.

In my more mature manhood I made spars and we put 20 of these into a raft. These spars were from 82 to 100 feet long, 17 inches up at the top. The butts were dressed down to the same size, 12 feet from the butt. We often sold each stick for as high as \$150 to \$175. I remember one stick in particular that was 100 feet long, 22 inches at the top, straight any way you looked at it. This tree or spar brought \$500 in the New York market.

Alas, these are all gone from that grand forest of years ago. There is such a small area of virgin forest left in the Eastern, Middle and Southern States that in a very few years there will be none left to look upon. I was very glad to see a law that made it possible for the Government to secure a large area and preserve the beautiful trees. I would be glad to help care for some of the lands, as there is nothing so beautiful to me as an undisturbed forest.

\$20,000,000 YEARLY FROM ONE FOREST

THE Forest of Compiègne, France, though a realm of beauty and enchantment to its lovers, is yet made by the State to yield an annual income of one hundred million francs (\$20,000,000), writes Lillie Hamilton French in the *September Century*. For this purpose it appoints seven *brigadiers* and twenty-seven *gardes-forestiers* besides several *gardes-cantonniers*. The *cantonniers* look after the roads, the guards protect the rights rented to the sportsman and wood-cutter—the two great clients from whom these revenues are derived—two hundred thousand francs a year being paid by the sportsman and eight hundred thousand francs by the wood-merchant. The guards must also see that these two groups of clients never encroach on each other's rights, for though the sportsman may hunt on the wood-merchant's land, he cannot carry from it a splinter of green wood; while the wood-merchant would have a suit brought against him if he were to pocket so much as a rabbit found burrowing under one of his dearly purchased trees. And some of these trunks are dear, one of oak frequently costing him a thousand francs.

So far as the question of revenue is concerned, *la chasse* is made to designate every right, whether of fishing or

hunting, which is rented to the sportsman. As a diversion, however, it means to its votaries two distinct kinds of hunting, the most important and picturesque being the *chasse à courre*, or hunt by pursuit, and in whatever direction the stag may lead. This takes place twice a week after the cold has set in, and always on horseback, with a following of hounds. This *chasse à courre* is never rented except to a single person and usually for six years, at an annual rate of 17,300 francs (\$3,460). When the lessee is frugal, as he occasionally is, he sublets it.

On the other hand, the *chasse à tir* or hunt with fowling-pieces, is divided into twenty-five "lots," and rented for various prices from twenty francs or more, and includes the right to shoot, within certain limits, hare, rabbits, doe, pheasants, and wild birds. The opening and closing of the *chasse* is decided every year by the *prefet*, as our Thanksgiving day is by our President, though it is generally on the last Sunday of August that one hears the report of the first authorized gun. The event is one of almost national importance, chronicled by every newspaper in the land, and discussed by every Frenchman, high or low, rich or poor.

OLDEST LIVING THINGS

THE oldest living things in the world are the sequoia trees in the General Grant and Sequoia National Parks, California. The Forest Service recently issued a bulletin telling all about them and how to get to them. These trees are also the tallest trees known. Within the two parks there are thirteen groves containing over 12,-

000 trees larger than ten feet in diameter.

It is estimated that some of these trees were growing 4,000 years ago. In fact, annual wood rings have been counted on one of the fallen giants in the Sequoia Park showing that it had reached that age.

The great pines of the Pacific coast,

400 and 500 years old, have reached old age, but the sequoia trees, several times as old as the great pines, are still in the bloom of youth.

They do not attain prize size or beauty before they are 1,500 years old and are in their prime when 2,000 years old, not becoming old in less than 3,000 years. Not only do these trees stand in a class by themselves because of their long life, but they are classed among the wonders of the earth because of their giant size.

In the giant forest in Sequoia Na-

tional Park, where the giants are named for men who have been prominent in public life, the General Sherman is 286 feet high and 36 feet in diameter, the Abraham Lincoln 270 feet high and 31 feet in diameter, and the tallest is the William McKinley 291 feet high and 28 feet in diameter.

In the General Grant Park the principal trees are the General Grant, 264 feet high and 35 feet in diameter, and the George Washington 255 feet high and 29 feet in diameter.

THE TALLEST TREES

THE big tree supremacy of California is being disputed by Australia. The tallest tree yet discovered in California was found by actual measurement to be 340 feet high. Australia's record gum tree can beat this by 140 feet. Baron Mueller, formerly government botanist of Victoria, is quoted as saying that Australian gum trees attain a height of 500 feet. But the tallest tree the baron measured was a prostrate one on the Blacks' Spur, ten miles from Healesville, totalling 480 feet. This tree was

81 feet in girth near the root. Another found in the same locality was 415 feet high, with a circumference of 69 feet at the base. Mueller refers to this species as "the highest tree on the globe, surpassing the famous California sequoia and Wellington pine." In 1889 G. W. Robinson, civil engineer of Berwick, in a journey from Gippsland to Mount Baw, measured a tree 471 feet high. The height of this specimen had previously been estimated at not less than 500 feet.

PINE LANDS OF NICARAGUA

CONSUL ARTHUR J. CLARE of Bluefields reports that "the pine belts on the Atlantic coast of Nicaragua extend north from the Rio Grande along the 84th meridian, west longitude, following the coast line into Honduras, and vary in width from 10 to 30 miles. This territory is traversed by the Walpasixa, Prinzapulka, Kukalaya, Wawa, Sisin, Awastara, and Wanks rivers and incloses the lagoons of Pahara, Twappi, and Beymona.

"All the above-named rivers are navigable, but bars across their mouths prevent large vessels from entering

and navigation at present is carried on by gasoline boats, canoes, and 'pit-pans.' The latter are large, built-up canoes capable of holding several tons of freight each.

"The land for a few miles on each side of the rivers mentioned is a dense jungle, where mahogany cutting is now carried on, log rafts being easily floated downstream. Inside from these jungles and around the lagoons the pine lands extend, and to obtain the best results railroads must be built to carry out the logs or sawed lumber.

QUESTIONS AND ANSWERS

Philadelphia.

EDITOR AMERICAN FORESTRY.—Can you supply me with a copy of the works of Prof. J. Franklin Collins and Howard W. Preston? Illustrated Key to the Wild and Commonly Cultivated Trees of the Northeastern United States and Adjacent Canada, bound in leather, also identification of the Economic Woods of the United States, by Samuel J. Record, M. A., M. F., bound in leather?

A. J. BONSALE.

The book to which you refer by Professors Collins and Preston is listed as The Key to New England Trees, Wild and Commonly Cultivated, and is published at Providence, R. I., by the firm of Preston and Rounds. I think you can get full information in regard to it from them. The other book, Identification of the Economic Woods of the United States, by Prof. Record, may be obtained from Messrs. John Wiley & Sons, 43 East 19th Street, New York City.—
Editor.

New Orleans, Louisiana.

EDITOR AMERICAN FORESTRY.—Insects are injuring my fine ash trees by boring into them. I inclose description. Will you kindly tell me what to do?

JOHN B. FERGUSON.

"In the absence of specimens of the insect which is injurious to the ash trees, I am unable to name the species. There are two insects which are injurious to ash by boring through the bark and into the heartwood, and I judge from the description which you give that the species concerned is probably the lilac borer (*Podosesia syringae*.) The remedies to apply are practically the same as for the leopard moth, considered in Circular 109, which will be ordered sent to you by the Division of Publications. If you are in doubt about the species I would advise that you send living specimens, if possible. I inclose frank and franked envelope to be used without postage in accordance with directions given in the inclosed circular letter. I am not quite certain that the species I have mentioned occurs as far southward as New Orleans, hence the advisability of obtaining specimens."

F. H. CRITTENDEN,
Bureau of Entomology.

New York City.

EDITOR AMERICAN FORESTRY.—The Legislative Drafting Department, attached to Columbia University, is at present investigating the question of restrictive legislation for the preservation of forests in New York where the maintenance is necessary for the protection of mountain sides, or for the existence of springs and streams, or for the prevention of erosion or floods. We should

greatly appreciate your assistance if you could give us any information concerning, or direct us to, any such or similar legislation that has been proposed, or recommended, or already enacted in any of the states.

LEGISLATIVE DRAFTING RESEARCH FUND.

"The question raised by this request is almost as broad as the whole subject of forest legislation, for the various reforestation acts and fire protective measures of whatever sort have for their purpose the protection of soil from erosion, prevention of floods, and the like, though they do not express it in so many words. The nearest approach to restrictive legislation of this sort would be those laws concerning the establishment and management of state or federal forest reserves such as have been passed by Massachusetts, New York, Pennsylvania, Minnesota, and Wisconsin, and the Federal Acts of June 4, 1897; May 23, 1908 and March 1, 1911, to mention the principal ones. So far as restrictive legislation, which applies to all forest lands, private as well as state, no state has as yet such a law on its statute books, although legislation of this character has at different times been under consideration in the States of Vermont, New York, Mississippi, Louisiana, and California. I will call your attention in this connection to an opinion submitted to the Senate of Maine by the Supreme Judicial Court of Maine on March 10, 1908 (103 Maine, 506), upon certain questions concerning the power of the Legislature to restrict and regulate the cutting of trees on wild or uncultivated land by the owner thereof, in order to regulate waterflow, in the interest of the general public. While the opinion of the court was favorable, no action, so far as I know, has resulted. Messrs. Gifford Pinchot and Overton W. Price have recently completed a very careful study of the forest conditions in the Adirondacks for the "Camp Fire Club," and in connection therewith went into the subject of restrictive legislation very thoroughly. I would therefore suggest that you consult them concerning further data.

I would suggest that the Forest Service is engaged in making a compilation of the forestry, timber and tree laws of all the states and that copies for such states as are now available or which may become so from time to time in the future will gladly be supplied them, provided they should have a special need for such a compilation. The number of copies for each state are only so many as can be made by one set of carbons on the typewriter. Their distribution has therefore generally been limited within the state to which they applied, and they are usually sent only to such persons or

institutions as are more than passively interested in forest legislation."

LOUIS S. MURPHY,

Acting Chief of State Cooperation Forest Service.

Mr. N. T. DOWLING,

Legislative Drafting Research Fund,

Columbia University, New York City:

Dear Mr. Dowling.—In reference to your recent request for information for the Legislative Drafting Research Fund of the University, I am appending the following opinion, given by Mr. Louis S. Murphy, of the Forest Service. I hope this will be satisfactory.—Editor.

Pottsville, Pa.

EDITOR AMERICAN FORESTRY.—I am inclosing in a small bottle some insects found on my maple trees. Please tell me what they are.

S. M. ENTERLINE.

The insects inclosed in a vial consist of two species. The most abundant form is the Norway Maple aphid, *Chaitophorus aceris*. Another species represented by one specimen is a tingitid, or lace-bug. The former species is undoubtedly the one causing the in-

jury to the maple leaves. This species has been very abundant over the eastern part of the United States during the past cool spring and summer, causing considerable injury to maple trees in some localities. Their habit of gathering on the leaves where they breed in extreme numbers, sucking the sap from the foliage and causing it to curl and turn brown, has attracted much attention. At the present time, however, very little complaint is experienced, as the insect has become well under control of its natural enemies and has, to a large extent, disappeared, owing, probably, to this cause and to the hot weather of the later summer. Trees are rarely killed by his pest, although at times appearing seriously injured and, as the insect rarely occurs in numbers for two successive years in a given locality, it is unlikely that remedial measures will be required.

Should it appear a second year, an application of whale-oil soap at the rate of five pounds to fifty gallons of water to the under surfaces of the leaves by means of a spray pump will prove effective in its control.

F. H. CHITTENDEN,

In Charge Bureau of Entomology.

BOOK REVIEWS

FORSTÄESTHETIK. HEINRICH VON SALISCH.
THIRD EDITION. ILLUSTRATED: VII+434
PP. JULIUS SPRINGER, BERLIN. 8 MARKS
(\$2.00); POSTAGE, EXTRA.

Foresters, landscape architects, educators and all those who wish to bring about the highest forms will welcome the third edition of a classical work on one of the most fascinating branches of forestry.

The first edition of *Forstästhetik*, or Forest Aesthetics, appeared as a small duodecimo volume in 1885; the second, much enlarged and improved, in 1902. The third, 1911, is still broader in its scope and has been re-enforced by twelve new chapters and sixty additional illustrations.

Part I deals with fundamental principles; Part II discusses their practical application. Each part is divided into two sections. Section A of part I embraces a discussion of terms and fundamental ideas, justifies the consideration of aesthetic values in practical forestry, and determines the position of forest aesthetics in the curriculum of forest schools. Section B of part I gives us an insight into the components of the forest as elements of beauty and lets us understand how effects of a higher order are produced by their combination. The discussion aids us to appreciate the beauty of expression of trees and woodland veg-

etation, the scenic values of mountain, valley and plain, the character of rocks, the fauna and flora of the forest, light and shade, color, sound and all that appeals to our senses and the imagination in the atmosphere of the forest. This section includes some references to American species that have been introduced into Germany. (p. 121.)

Part II is likewise divided into two sections. In section A the ideas set forth in part I are applied to the actual work of the forester, to the construction of road systems and the several systems of management, including the questions of rotation, compartments, thinning, pruning and regeneration.

Finally, in section B of part II the author goes a step further and discusses the possibility of forest "adornment" by way of the beautification of roads, openings, views, the preservation of historic landmarks and individual old trees, etc. He is careful here, as in other passages of the book, to make a careful distinction between the economic forest and the park.

From the preceding outline the reader will conclude that this is not a mere theoretic or philosophic inquiry. He will find throughout this book a thorough and masterly treatment of the subject. He will find that both theory and practice have been

given full consideration. The scenic value of trees and forests and the intimate relation that forest aesthetics bears to practical forestry are matters, it will be admitted, that have hardly, thus far, been clearly understood or even considered by the average forester. This neglect may be due to force of circumstances—the forester, indeed, needs about all his strength and nerve to cope with the problems that immediately confront him—or the condition may be the result of that common impression, though false, that forest use and forest beauty are incompatible, and that these are matters that should be handed over exclusively to the landscape architect and the lover of nature. Such readers, if there are any, will find a strong argument to the contrary in the opening chapter of this book.

The main object of the author is to show the feasibility of a practical application of his researches to economic forestry. He endeavors to prove that beauty and use can be made not only to harmonize, but that each is complementary to the other and that forest aesthetics is, in fact, an essential and indispensable part of the highest development of forestry. A marked characteristic of the work are the ample explanations and analysis of the ideas that are advanced, and the innumerable citations from the writings of other authors.

The author's thorough knowledge of aesthetics as well as of forest science in all its branches, his excellent taste and insight, and the actual application of his ideas, carried out by himself during the past thirty-five or forty years on his own forest estates in East Prussia, have given him a wide and thorough grasp of the subject. It is a mark of the highest commendation that the Prussian government has recently provided for the introduction of this work into the libraries of all its forest reserves, some eight hundred in number, besides thirty others in those of the Province of Alsace and Lorraine.

The illustrations are clear and suggestive although one regrets the absence of the attractive heliotypes that were included in the second edition. The exclusion in the present edition appears to have been necessary to keep the price of the book within reasonable limits. An American or English reader might urge the desirability of some condensation in form and substance. Yet when these and minor objections have been made the essential excellence of the work remains and it will take its place as one of large scope and usefulness in the literature of forestry.

While it is true that much in this book is applicable mainly to European forest conditions and particularly to those of Germany, it is very rich in suggestions for the American forester and many of the measures explained might even today be applied with us, where conditions and opportunities are

in many respects even more varied than those of Europe.

FORESTRY. By PROF. HERMAN H. CHAPMAN; CLOTH \$1.25, POSTPAID. PUBLISHED BY THE AMERICAN LUMBERMAN, CHICAGO, ILL.

This is one of the most valuable of the essentially practical publications on forestry because it obtains a great store of information which can be read with interest and readily assimilated by lumbermen, timberland owners and others who with little or no technical knowledge of the subject desire plain, clearly understood information upon it. No forester in the United States is better fitted for writing such a book than Professor Chapman, and each chapter is full of logical statements of the progress of forestry in this country. The first part of the book treats of the growth of the different species, tells of the influences of the seasons and the last temperature; another section deals with natural reproduction and tells how it may be encouraged. Silviculture, forest mensuration, taxation, fire protection and prevention are all discussed in a manner which cannot fail to be interesting to the reader and student. In fact there is no phase of forestry which is overlooked and the book should be in the hands of every lumberman, timberland owner, student and all lovers of trees and advocates of forest conservation.

IDENTIFICATION OF THE ECONOMIC WOODS OF THE UNITED STATES, including a discussion of the Structural and Physical Properties of Wood, by Samuel J. Record, Assistant Professor of Forest Products, Yale University, 1912, 8vo, vii +117 pages, text figures 15, half-tone plates 6, New York, John Wiley & Sons. Price \$1.25.

Students and teachers of forestry will welcome this little book, which deals in a very clear and detailed manner with the structural and physical properties of the commercial woods of the United States. It is designed primarily as a manual for students of forestry, yet with a little study of the text and illustrations laymen will find it advantageous in the identification of our native woods. Other published information on the North American woods is very limited and scattered. Forest Service Bulletin 10, entitled "Timber," by Professor Roth, is the only publication that directly approaches this work in character. Professor Record's book is not only an amplification of information contained in this bulletin, but it embodies also much additional material of interest and practical importance.

About one-third of the text is devoted to the anatomy of the woods of both conifers and hardwoods. This includes a discussion of the gross features of the stem from pith to bark inclusive, and the microscopic

features of the secondary wood. Sufficient detail is given to make the subject clear and comprehensive. This part of the text contains practically all of the information essential in the use of the key for identification of woods. For further detail and research the reader is directed by an extensive bibliography to other works on the subject.

A discussion of the physical properties of wood comprises another one-third of the text which together with the structural qualities already mentioned constitutes part I. Under the physical properties attention is given to density, water content, shrinkage, hygroscopicity, penetrability, conductivity, resonance, color, gloss or luster, scent or odor, and taste, giving the relation of these properties to the usefulness of wood and to their adaptability to some extent as aids in identification. Where so much is excellent as the detailed discussions of the chapters above referred to, it may seem ungracious to suggest possible improvements; and yet one can not but regret that the author omitted under this part a general consideration of the mechanical and chemical properties of wood, both of which are very important in determining the usefulness of wood. Flexibility, toughness, and cleavability are features of invaluable assistance in identification. Yet the book gives quite as much as can be mastered by the student of forestry in the time usually allotted to the subject. As is almost unavoidable in the first edition of a work of this kind, a few omissions of words may be noted,

and some typographical errors have crept in.

Part II is a key specifically identifying almost 100 woods; others as the pines, firs, oaks, hickories, and poplars have not all been separated into species because they do not present sufficient apparent structural differences. However, by knowing where a piece of wood originated, the distribution area indicated after each species, may help in separating a species from a group. The key is far more detailed and comprehensive than any other yet devised for American woods. It is upon this part of the book that the author has spent his force, and in the main he has accomplished a most admirable task. The distinctions in the key are based on gross features as far as is practicable, a hand lens and a sharp knife constituting the only equipment necessary to distinguish most of the species. Quite often, however, the author found it necessary to add microscopic features to distinguish two or more closely resembling woods. The writer has tried out the key on a large number of woods, and found it clear and correct in every case.

Thirty excellent reproductions of photomicrographs of sections of native woods are added as aids to the key. The illustrations in the text are mostly diagrammatic drawings, and they serve the purpose much better than photographic reproductions.

The many references cited by the author show his broad range of study, and are a wonderful time-saver to the student engaged in further research.

A. K.

PRIZES FOR CANADIAN SEED GROWERS

The Canadian Seed Growers' Association (address, Ottawa) gives notice that prizes in the form of cash and special trophies are offered for seed grown in the Province and exhibited at the next annual winter fair or Provincial Seed Exhibition. The date of this exhibition will be made public later.

MR. SEWALL'S ACTIVITIES.

Messrs. Kenneth M. Clark and James A. Connors, of the forestry staff of James W. Sewall, Old Town, Maine, have gone into northern Maine to take charge of the mapping, surveying and exploring of a large tract of land for the Great Northern Paper Company. Mr. Sewall is on a short trip in the upper Penobscot region of Maine, in the interests of one of the timberland owners of that State. Last year Mr. Sewall had charge of the complete mapping, estimating and surveying of approximately 500,000 acres of land, in both Canada and the United States.

MacMILLAN INSPECTING.

H. R. MacMillan, who was appointed to the position of Chief Forester for British Columbia, recently visited the Sooke, Goldstream and Cowichan district on Vancouver Island, in order to see how the work of forest protection was progressing there. He was accompanied by Mr. H. K. Robinson, the chief of the surveys branch of the forestry department, Divisional Fire Warden Markland, and District Fire Warden Bittancourt.

EDUCATIONAL

Of all the five Pacific Coast timbered states there is not one which possesses greater natural advantages for maintaining a live, practical, well-equipped school of forestry than does California—a state of unlimited resources, a wonderfully rich and progressive state, that in most matters is foremost in a policy of aggressive development, and alert to the best interests of its citizens. This brings out in more striking contrast its short-sighted policy in the lack of forestry school in connection with its university. The nearest approach to it of which the university can boast, is the Forestry Club, organized by a body of its members, who are putting forth herculean efforts to promote the movement toward the establishment of a forestry department at the university, through conducting a publicity campaign and bringing all the support they can to securing a state appropriation for the department. The State of California ranks third in its amount of standing timber; there are 28 millions of acres in the National Forests in which practical forestry is being conducted; has nearly a half-million acres of delinquent tax land, much of which will develop into state forests; it also has much logged-off land that is fit only for reforestation. There is, and will be for many years to come, an unsupplied demand in the state for trained foresters, skilled logging engineers, and expert knowledge of

the entire operation from tree to finished product. But it takes money to maintain such training schools, and in a state where lumber is one of the main industries, contributes so large a volume of taxes for its support, and is the paramount community builder, it is the duty of the state to help supply the technical training needed in this industry, by making an appropriation that will build, equip, and maintain an adequate forestry department in connection with its university.

Boys' Forestry Camp

The New York State College of Forestry at Syracuse University is to maintain a forestry camp for boys at Saranac lake next summer. "This will not be a 'kid glove' deal, but a real educational proposition which will give boys of, say, between 15 and 20 years of age, practical experience in forest life," says Dean Baker. "It will cure a lot of them of the forestry bee, and at the same time fix a love of scientific forestry in the minds of others." The tuition and board will be small enough so that boys whose families are in moderate circumstances can afford to join the camp. "We will teach a great deal of woodcraft, some forestry and a little botany and geology," the dean added.

LUMBER ASSOCIATIONS INTERESTED.

The National Hardwood Lumber Association, with headquarters in Chicago, with 800 members; the National Wholesale Lumber Dealers' Association, with offices in New York, with 425 members, and the West Coast Lumber Manufacturers' Association of Washington State, with 129 members, have now been elected to membership in the Chamber of Commerce of the United States of America.

THE PROUD BOAST OF MEMPHIS.

Declaring that Memphis holds undisputed title to supremacy as the leading hardwood lumber market of the world the Committee on Statistics of the Memphis Lumbermen's Club has compiled an interesting report on the lumber situation here in 1911.

RAILWAY REGULATION TO PREVENT FOREST FIRES.

Order 16570 of the Dominion of Canada Board of Railway Commissioners covers the method of equipping locomotives so as to prevent them from being a cause of forest fires, and at the same time lays down the liabilities and requirements of railway companies in the event of such a conflagration occurring.

A LARGE PURCHASE.

The Laurentide Company, Ltd., Grand Mere, P. Q., have purchased a large tract of territory consisting of 398 miles of forest, from the Calvin and Power Companies, on the Upper St. Maurice river. The Laurentide Company already own over 400 miles of territory in the district. An addition to the sulphite mill is being erected by the directors.

NEWS AND NOTES

The Cannon Ball Tree

One of the most remarkable plants in the world is the cannon ball tree, to be found in British Guiana. The natural height of the tree reaches to eighty or a hundred feet or even taller. The fruit is a hard globular capsule, seven inches or more in diameter, containing numbers of flat, circular seeds rather larger than a dime. It resembles a thirty-two pound shot, is brown in color and very rough.

Famous Pine Gone

The famous De Lancey pine in the Zoological Park, New York, one of the most widely known trees in the East, has been cut down. The tree stood within the boundaries of the New York Zoological Park. It was 150 feet high, and could be seen for a long distance. The pine, according to Mr. Merkle, forester of the New York Zoological Society, died from old age. By actual count of the rings the tree was 260 years old.

"The pine had been dying for the last fifteen years or more," said the forester yesterday, "and it was a source of danger. A large part of the trunk has been left standing, and ivy will be planted beside it so that at least that part can remain as a reminder of its historic significance."

Under the historic pine was reared a mansion presided over by one of the De Lancey family, Colonel James De Lancey, of the Westchester Light Horse, who was High Sheriff from 1770 to 1777, and who sided with the King. He was the son of Peter De Lancey, known as Peter of the Mills.

Watching for Forest Fires

The newly-established fire observation on Mount Pisgah is doing good work and already some thirty forest fires have been discovered. The attention of the fire warden of the town where the fire was in progress is in each case called to the facts and by the timely observation was soon under control.

The observer on the tower is Ira Chase and he is a man well-fitted for the work in which he takes a great interest. The present tower is situated upon the top of a high pine tree, on the summit of the lofty rise of land known as Mount Pisgah.

Mr. Chase is supplied with a chart of the surrounding country and he is connected with the world by telephone, so that he can get into communication when occasion de-

mands. The towns over which he is keeping watch are Amherst, Bedford, Brookline, East Ridge, Greenfield, Greenville, Hollis, Lyndeborough, New Boston, New Ipswich, Mason, Merrimack, Milford, Mount Vernon and Wilton.

The following Massachusetts towns have asked to be taken in under this supervision and this has been done: Ashby, Ashburnham, Townsend, Pepperell and Winchendon. The entire district is in charge of Fire Warden Worcester L. Winslow, who for thirty years or more has been connected with the Milford department for fighting fires, and is one of the most skilled fire fighters in the State.

Trees to Check Floods

The New York Commercial says: "When Congress comes to consider the problem of checking the spring floods in the Mississippi Valley, the reforestation of the hills and mountains in the valleys of the Ohio and its tributaries will no doubt receive much attention. In these regions are the former sources of supply of our most valuable hardwoods, the growing scarcity of which is threatening the prosperity of many important industries. Hardwoods are superior to pines, firs and spruces, for forest reserves, because they are less liable to be devastated by fire. Extensive fires in hardwood forests are practically unknown and are easily checked and put out with little damage; but a fire will race through the tops of pine trees as fast as the wind can carry it, and in many cases man is helpless and only rain can stop the loss. Scientific planting with areas for fire breaks free from pine or other coniferous trees could be introduced where the soil is not suited for hardwood, but the demand for the latter is more pressing for industrial purposes.

Remarkable Trees

There are being brought to the United States Plant Bureau seeds of two rather remarkable trees.

One seed comes from the southern part of the Island of Luzon in the Philippines. It is from the pill nut tree, and is said to be extraordinarily rich in flavor. The tree is a very large one, and the Americans in the Philippines think the nut is the finest grown. If a lighted match be held to a nut when roasted it will burn like a lamp, so rich is it in oil.

The other tree is found on the Isthmus of Panama and is one of the most interest-

ing trees of the tropics. It is called the candle tree, and it is quite worthy of its name, for when its fruit is ripe its branches appear as though covered with candles, for all the world like an old-fashioned Christmas tree.

A New Surrender Tree

The famous old apple tree near Appomattox Courthouse, Virginia, under which Lee surrendered to Grant, long since carried away piece by piece by souvenir hunters, is to be replaced by a tree planted by Woodrow Wilson, Colonel Armes, U. S. A., owner of the Appomattox farm announced that the Democratic presidential nominee had accepted an invitation to visit the historical place to plant the new tree within the next few weeks.

National Forest Changes

President Taft has just made considerable changes in national forests in Montana, Arizona, Nevada, Utah, and California through presidential proclamations modifying the boundary lines. By these changes nearly 275,000 acres of land are eliminated from the forests, about 65,000 acres are added, and about 55,000 acres are transferred between two forests, while a new forest is created by the division of an old unit into two.

The net result is to bring down the total gross area of the national forests to about 187,400,000 acres, of which nearly 27,000,000 acres are in Alaska. To a considerable extent, however, the reduction, so far as land actually owned by the government is concerned, are apparent rather than real, owing to heavy alienations in the tracts eliminated. Some 22,000,000 acres of the national forest gross area are not owned by the government.

Japan is Years Ahead

Just at the time when this country is beginning to struggle with the problem of husbanding its forest resources, of protecting its mountain slopes, and of improving the waterways, it is interesting to know that the Japanese have successfully attacked the same problem, before the land suffered severely from the evil effects following deforestation. The far-sighted people of Nippon have foreseen results of the destruction of their extensive mountain forests, and have safeguarded themselves by placing all of these under government control.

The practice of forestry has been carried on in Japan for a longer time than in any other country. For 1,200 years the people of Japan have been planting and growing forests, with a success that has been a little short of marvelous. Under careful manage-

ment, the Japanese forests yield very high financial returns. This high yield is only made possible by the close utilization of every bit of the trees so that scarcely a twig is wasted, and by the improvement of the growth of their forests by carefully conducted thinning and tending. The woods are first thinned at the age of thirteen years, and then every five years after that up to the time of the final harvest, at 120 years.

Seeking German Bugs

Germany's forests are being searched by the officials of the American Forestry Service for ichneumon fly eggs. It is proposed to breed these flies in American forests in the hope of killing off gypsy moths.

The ichneumons lay eggs in the larvae of other insects, especially of the gypsy moth, and it is hoped that they will rid the United States of these pests.

Sequoia Sempervirens

Walter B. Parks, of the California Nursery Company of Niles, Cal., writes to AMERICAN FORESTRY as follows: On page 414, June issue, you speak of transplanting young trees of Sequoia gigantea from our State Redwood Park in Santa Cruz County to Florida. There are no native trees of Sequoia gigantea within a hundred miles or more of there as the only Sequoia in the Coast Ranges is Sequoia sempervirens or "Redwood," the Sequoia gigantea or "California Big Tree," as it is commonly called here, growing naturally only in the Sierra Nevadas. So if the trees came from the State Redwood Park or "Big Basin" they are, of course, Sequoia sempervirens.

Conserving Alabama's Forests

Alabama contemplates the enactment of measures conserving the forests, mines, waterways, and other kindred natural resources and Commissioner John H. Wallace, Jr., has written to the Secretary of Commerce and Labor for Federal Statutes and State Laws bearing on the subject. In answer to him Philip P. Wells, chief law officer of the U. S. Reclamation Service, has sent him general information on the subject, and in addition says:

"Further information may be obtainable from the columns of AMERICAN FORESTRY, the organ of the American Forestry Association, Maryland Building, this city.

"There has been much activity by the states in forest legislation, and some in other conservation legislation. Most of the advanced State forest laws have been drafted in co-operation with the United States Forest Service. Such a law was

drafted for Alabama in 1907, if I remember the year correctly. Similar laws have been drafted and enacted in Maryland and Tennessee, and you could probably secure the text by writing to the proper authorities in those States. I think the same is true in Louisiana. The New York State Library published for many years an annual bulletin entitled 'Review of State Legislation.' The Review was arranged by subjects among which was Forestry and, I think, Fish and Game as well as other phases of conservation. Under each of these topics there was a summary of the legislation in all States on that topic for the year in question. You will find this a valuable guide for your purposes. Presumably the text of the laws there summarized may be found in your State Library." Library."

Pacific Logging Congress

At a recent meeting of the Pacific Logging Congress at Tacoma, Wash., the following resolutions were passed:

"The Congress believes that the growing of timber is a National and State function and each state should make a careful examination of its cut-over lands unfit for agricultural purposes and better adapted for reforestation, with a view of purchase through condemnation or otherwise, and proceed to the creation of State and National forests.

"The Pacific Logging Congress believes in the expenditure by the various states and provinces of liberal and adequate appropriation for forest fire protection. To this end we endorse the efforts being made for the creation of field military posts near the National forests, with a view of utilizing the National troops when emergencies arise in the protection of the National forests from fire."

Railroad Reforesting.

The Delaware & Hudson Railroad has now taken up the problem of reforestation. C. S. Sims, Vice-President and General Manager of the company, is devoting much of his personal attention to reforesting the lands owned by the company throughout the Adirondacks and the coal region. The Delaware & Hudson Company has a well established nursery on the grounds near Hotel Champlain, and more than 3,000,000 seedlings are being cultivated there. The company

owns 200,000 acres of land in the Adirondacks and coal region, which are in process of planting with trees. More than 600,000 trees will be planted this year. In the Adirondacks Scotch pine will be planted, and in the coal region red oak.

This extensive work conducted by the Delaware & Hudson Company will not only have the practical effect of immediate advantage but also has much educational force as an example to be imitated. With large corporations leading the way in this manner, and with the rising generation instructed through textbooks and the object lessons of Arbor Day, there should be a great impulse given to that very vital and essential phase of conservation of natural resources which is represented by the planting of new trees to take the place of those which have been consumed by the needs of a growing country.

Enforcing Plant Quarantine.

Preparations are being made by the Department of Agriculture for the immediate enforcement of a part of the national plant quarantine law just passed by Congress. The bulk of the provisions of this quarantine law will not be enforced until October 1, but provision is made for the immediate enforcement of the restriction against the importation of plants liable to harbor the Mediterranean fruit fly. This will affect the importation of orange and lemon stock from the Mediterranean region.

The United States until recently was the only first-class power that had not a national plant quarantine law, and efforts have been made by the Department of Agriculture for several years to get such a law enacted. Several of the individual states have effective quarantine laws and efficient inspectors, and through co-operation it has been possible to head off a number of plant shipments that would have been highly injurious. About two years ago there was a large shipment of nursery stock from France that was infested with nests of the brown-tailed moth. Through the State inspectors 800 parcels were found and destroyed in thirty-six different States. The enforcement of the new law will be under a commission of five experts of the Department of Agriculture, who were appointed recently.

They are C. L. Warlatt and A. F. Burgess, of the bureau of entomology; W. A. Orton, plant pathologist; Peter Bisset, bureau of plant introduction, and George Sudworth, of the forest service.

STATE NEWS

Massachusetts

The watch for forest fires in this state—The Boston Chamber of Commerce News is impressed with the results already obtained through the system of forest fire prevention which followed last year's appropriation of \$10,000 for a forest fire warden. It is believed that the difference between \$500,000 and \$30,000 represents the saving of forest property in Massachusetts in the year. State Fire Warden Hutchins is in charge of the work, assisted by 14 men, one at each of the stations in operation. Before the stations were established last year the damage by forest fires amounted to \$501,944, while during the same period this year the damage reported was only about \$30,000.

Ohio

"We must either reforest our denuded acres in Ohio or build cyclone cellars to provide safety from the windstorms that are becoming common in the state."

This is the conclusion of A. P. Sandles, secretary of the Ohio State Board of Agriculture, after a careful investigation of storm damage through the state during the present year.

Sandles, who always is digging through the facts connected with agriculture in the state, is strong for more trees. He is firmly convinced that, with thousands of acres of trees growing, there would be less storm damage, more surplus moisture stored up in the earth for the benefit of the growing crops and a better condition generally for all the people. His first advice is to plant trees. If he has anything further it would be to keep on planting trees.

"The storage of surplus moisture for the growing crops is largely dependent on the timber area about the headwaters of streams and near the farms," Sandles claims. He insists that, with more trees in the state, there would be more and better corn, oats, wheat and hay and even the high cost of living would be given a fatal thrust if the trees were planted and natural conditions for this climate restored.

"The state ought to have thousands of acres of new growing trees planted next year, he says. We ought to increase the acreage of trees planted every year until the denuded hills again are covered with the trees that were supplied by nature when the country was wild. With that will come the restoration of natural conditions and the state will be much more prosperous. Plant

the trees, fertilize the acres that have yielded uncomplainingly for over a century, use sound judgment in the rotation of crops and Ohio will again produce a score of bushels of wheat per inhabitant and the question of the high cost of food stuffs in that line, will have been settled."

Washington

Campers who carelessly start forest fires in Washington state will be prosecuted. They ought to be prosecuted, and they ought to be convicted and punished in all cases where the proof shows that a lack of care on their part is responsible for forest fires.

Annually, during the dry season, forest fires cost the state of Washington millions of dollars. Forest fires exact a more precious toll in human lives also. Not infrequently, too, homes are swept away, and it is all because of a lack of care and caution on the part of persons who frequent and use the woods of this state.

It is easy to guard against forest fires. When citizens break camp they should not leave any fire behind them. By the use of water or dirt they can extinguish the camp fire; it will take only a few minutes to do it, and if campers will stop long enough to think that they may thus save millions of dollars in property values and at the same time prevent many hardships, and possible tragedies, they will not begrudge the time spent in this way.

Kentucky

Under the Federal statute providing \$200,000 annually for the purpose the United States Bureau of Forestry will co-operate with the Kentucky State Forestry Commission. Either Chief Forester Graves or Assistant Forester Greeley probably will visit the State Commission in launching its work.

A statement to this effect was made by Governor James B. McCreary after he had had a lengthy interview in Washington with the United States Chief Forester and his first assistant. It is believed that either J. E. Barton, a native of Michigan, whose wife was a Princeton girl, or a Mr. Lafon, native of Mercer County, both now in the government forestry service, will be appointed Kentucky Chief Forester by Governor McCreary following his return to Frankfort.

Massachusetts

To encourage the reforestation of Essex County is a task on which W. P. Dillingham is now at work. He is assistant secretary of the Massachusetts Forestry Association, an organization that hopes to have 1,000,000 acres of now waste land planted to trees.

Mr. Dillingham would have each town and city convert the waste land about it into a forest, and thus insure fuel and building material for the future. He declares that each town could actually net from \$3 to \$5 annually from each acre of such forests and backs up this statement with figures showing that Baden, a European city, with a population of 16,000, has a forest of more than 10,576 acres, which nets \$6.25 per acre each year, while Zurich, Switzerland, is said to clear \$12 per acre annually from its town forest.

"Our manufacturers," says Mr. Dillingham, "are paying from \$2 upwards more per thousand feet for timber imported from other states than they have to pay for the home grown product. If our now waste land was put under silviculture, it would increase the lumber industry in the state by an amount netting from three to five millions of dollars annually and furnishing employment to thousands of our citizens."

Florida

On the grove of O. L. Whidden, one of the prosperous fruit growers out east of Arcadia, are to be seen some grape-fruit trees of immense size. These trees were planted nearly forty years ago. They measure from sixteen to twenty-four inches in diameter and from six and seven feet in circumference. The trees bear each year from twenty-five to forty boxes of delicious fruits. Located as they are, and being old and hardy, they went through the freeze of '94 and '95 without any material damage.

Texas.

The Etude Club, composed of the leading society women of Denison, will go down in history as the first organization of women in Texas to take up the plan, originating at Sapalpa, Okla., for the planting in Texas of pecan or other nut bearing trees along the right-of-way of the Canada-to-the-Gulf highway, which will extend from Winnipeg, Canada, to Galveston, Texas, passing through the various places of interest and principal cities of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and Texas, and will rival in symmetry, length and beauty, when completed, any public pike in the world.

The magnificent highway will follow closely the banks of the beautiful Red River of the

North, and will have the distinction, too, of crossing the Red River of the South at Denison, which is the largest Southern tributary of the Mississippi, the Father of Waters. The great transcontinental boulevard will also follow along the Missouri River, where the landscape is unsurpassed, beginning its stretch across Oklahoma at Caney, Kan., thence to Denison, Tex., where its course will be wended to the balmy waters of the Gulf of Mexico at Galveston, entering that delightful Southern port over the new concrete causeway.

New York

Oscar Bravo, a representative of the Chilean Government, who is making a tour of the United States and various other countries for the purpose of securing information relative to Forestry matters, has called on the New York State Conservation Commission. Commissioner Bravo secured a large fund of valuable information in regard to New York State's forestry work, which is far in advance of sister States. The Chilean representative was so well pleased with what he learned here, that he decided to make a tour of the Adirondacks to look over the State lands, nurseries and reforestation operations. He is especially interested in New York's forest fire protective system and will give that careful study.

Fish and Game Commissioner of Alabama John H. Wallace has written the Conservation Commission of New York State advising it that the State of Alabama "contemplates the enactment of measures conserving the forests, mines, waterways and kindred natural resources," and that it has in view "the creation of a conservation commission to have supervision and charge of all matters relating to the natural rights of our people." He asks the New York Commission for copies of the New York State Laws bearing on this matter. The request was cheerfully complied with.

Oregon

A Salem (Ore.) dispatch says: "Lightning, according to advices received by the Forestry Department, has been a great factor in producing forest fires this season. Advices received today from field men in Klamath County state that five fires were started during the last storm there, and advices from Eastern Oregon say that many were started there in the same way. The wardens, however, had but little trouble in controlling them, and little damage was done. So far the damage resulting from forest fires has been light."

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REDUCED FOREST FIRES.

The adoption by Massachusetts of observation towers at a cost of about \$20,000 is said to have cut down the forest fire loss from \$530,426 last year to \$50,000 this year, the figures in both cases applying to the first seven months of the year.

The towers are scattered all over the State. Each has a watchman with a telescope on duty daily looking for signs of a forest fire and ready to telephone the forest warden of the vicinity.

Of 1,500 fires recorded the present year 1,300 were first reported by the tower watchers. Nearly one-third of the total number are ascribed to locomotive sparks, and they burned over 3,586 acres, causing a loss of \$19,167 and a cost in putting them out amounting to \$2,598.

In the other two-thirds of the total 11,381 acres was burned over, causing a loss of \$30,824 and a cost for putting out of \$9,171.

TRANSPLANTING IN WASHINGTON.

During the fiscal year ended June last, 3,824 trees were transplanted from the District of Columbia nurseries to permanent places along the streets, according to the annual report of Trueman Lanham, superintendent of trees and parkings.

More trees were destroyed by leakage of illuminating gas than by any other cause, 320 shade trees having been killed in this way. Superintendent Lanham places the blame on local gas companies, who do not repair their mains promptly.

